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The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNITY FORESTS.

FOREST RECREATION as a growing need in the social development of the nation; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA and FAUNA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

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AMERICAN FORESTS AND FOREST LIFE invites contributions in the form of popular articles, stories and photographs dealing with trees, forests, reforestation, lumbering, wild life, hunting and fishing, exploration, or any of the many activities which forests and trees typify. Its pages are open to a free discussion of forest questions which in the judgment of the editor will be of value in promoting public knowledge of our forests and their use. Signed articles published in the magazine do not necessarily reflect the views of the Association. Manuscripts must be accompanied by return postage. Editorial and Publication Office, The Lenox Building, 1523 L Street, Washington, D. C.



WHITE BIRCHES

Photograph by V. Akers



Indian Lore and Tradition Color the Hazy Heights of the Great Smokies

Tree Myths of the Cherokees

By ROBERT LINDSAY MASON



INETLANA A'NIGWA—"soon after the creation"—when trees and plants were first made there occurred a "great medicine" which divided them into two classes: evergreen and deciduous. This tribal ordeal of the trees and

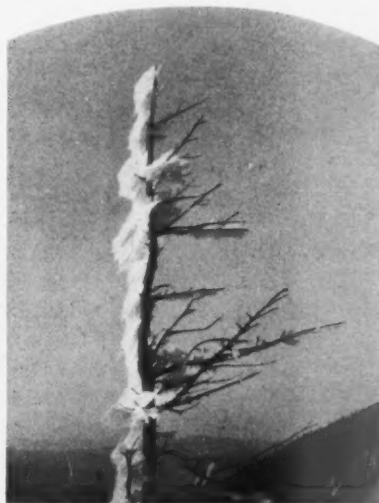
shrubs was very severe, according to John Ax (*Itagu'nuhi*), one of the most famous of old Cherokee storytellers, and although trees had souls, could talk like men and were very powerful, yet they were human and the difficult task of staying awake for seven days and nights was so very strenuous that many of them failed. The aspen never did thoroughly recover from the evident strain and its leaves tremble to this day even when apparently no air is astir.

Some of the trees and shrubs were faithful to the end and accomplished the feat, however. These were rewarded with becoming the "greatest medicine"; those who were only partially successful or failed altogether were punished by the Great Shaman or Chief of the Forest by being compelled to "lose their hair"—foliage—every winter and to shiver in the

icy blasts upon the mountains "without their clothes." The promise was made that they were to have new clothes every spring when the "little red root" put out its leaves and the

timid fawns made their appearance with their mothers.

Conversely, the successful contestants were also further rewarded by being given an additional mantle of "white fur" to help protect them from the cold when it became necessary. And who has not seen the balsam, the pine, hemlock, laurel, spruce, holly, mistletoe and cedar loaded down like kings with their ermine coats of snow in the deepest of winter upon the mountain tops? Perhaps these also try to share their warm coats with the naked and shivering birches and aspens standing near!



Ermine coats of snow kept the successful contestants warm

Many of the partially successful trees and shrubs however were later used as "little medicine" to assist in curing the evil diseases adopted by the irate animals, birds, and insects who held a convention in their "town

house" under *Kuwahi*, or Clingman Dome, the highest peak of the Smokies, for revenge against man for his endless persecutions. The grubworm was elected president of this im-



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Hemlocks and Tulip Poplars. In the "big medicine" all the trees and shrubs proved their loyalty to man, offering the juice of their roots and bark as an alleviation of diseases to which he was heir

portant council not only because he was *unega*, or "white" but also because he had the greatest grievance of all; he was being continually stepped upon by everybody everywhere and he was tired of it!

All of the trees and shrubs proved their loyalty to man and in an opposing and imposing assembly of their own—assisted by the plants—decided to offer the juice of their roots and bark as an alleviation of the terrible diseases adopted by the Animal Convention Incorporated, for the extermination of their common enemy, man. "This," says John Ax, impressively, "was the beginning of all medicine"! So our greatest land plants of the Smokies, towering in their remarkable dimensions not only offer their shade, their retention of moisture for the benefit of the friendly plants at their feet but also their sap, bark, and roots for medicine.

The humble sassafras, black gum, service tree, flowering dogwood, wild cherry, elm, waahoo, birch, linn, ash and walnut, all unselfishly offer their benefits although they were defeated in the first test by the Great Shaman. The greatest medicine of all was allotted to the cedar, partly because of a very important event which occurred "in the beginning" in Cherokee traditions and also for the reason that it possessed a unique balsamic fragrance, beauty, and an enduring quality of firm wood texture.

Its entrancing sandalwood incense always has filled every council of importance among all the Indians of North America and, even yet where such councils are more remotely celebrated than formerly, its fragrant twigs are sprinkled upon the lodge or medicine fire at the initiation of sacred tribal rites. Although the ancient Great Smoky Mountains shaman have vanished with the vapors of their cedar incense into the dim mists of the past, yet they are remembered with the greatest of respect among North Carolina Cherokees. Each present-day Cherokee Indian who grasps even a faint claim to the title of "chief" has a renowned medicine man or storyteller as a grandsire somewhere within the immediate line of his descendancy. These fine traditions and medicine tales fading more dimly with each rapidly advancing year of our modern life would have vanished completely had it not been for registered records of them in our national archives inscribed in the alphabet invented by one of their number, Sequoyah, in 1821, and the myths as told by Wafford, John Ax, old Catawba Killer, Swimmer, and Suyeta the Chosen One, a Baptist minister, over a half century ago.

All Indians are close observers of nature and her phenomena but the Cherokee is perhaps the keenest of all and loved his towering blue peaks

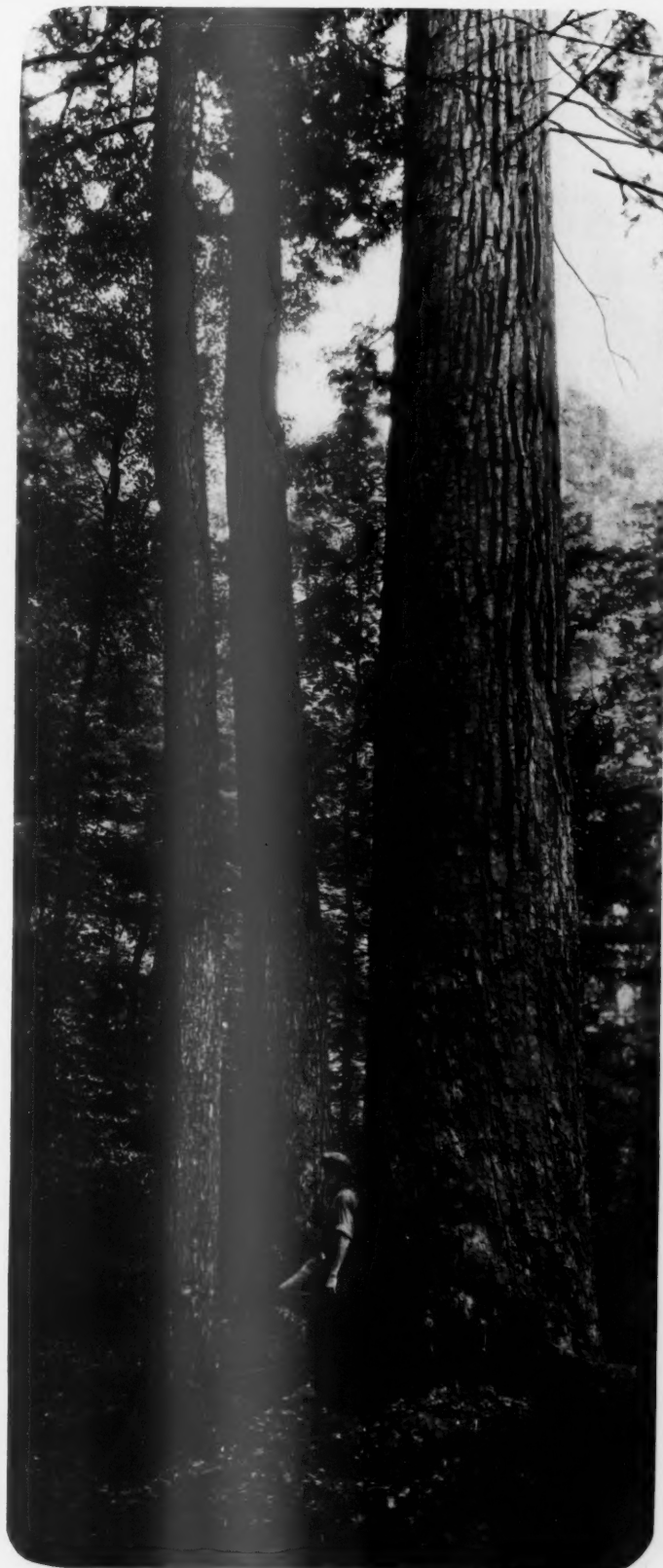
of the Smokies with a passion unexcelled by any North American aborigine for his domain. Many Cherokees still adhere doggedly to their old beliefs in spite of modern education and religion.

Not one of them, for instance, will touch a tree which has been struck by lightning. Nor will they knowingly use it for fuel. But the oldtime conjuror attached peculiar powers to such a tree and used its splinters for brewing magic concoctions in making "big medicine." The linn or basswood and the black gum were believed never to have been struck by lightning. If a redskin was caught by a thundershower in the mountains he would readily seek the shelter of these trees with a perfect sense of security. It was believed that the thunderbolt itself could not descend them; after striking, it would vainly run around it seeking a point to run aground. A commentator attributes this to the fact that nothing, not even such a high voltage of electricity, could find its way through a dense black gum and get anywhere!

The writer remembers a sweet gum tree on top of the Smokies near Mt. Collins which had been riven by a fiery bolt from the ever hovering clouds. From the old jagged wound had oozed a tasteful gum but the mountaineers in the party would touch neither the tree nor the gum! This superstition was probably reminiscent of their neighboring Cherokees living a few miles down the North Carolina slopes.

Attributing mysterious properties to such a tree the old Cherokee conjuror always prayed fervently to *Asga'ya Gi'gag'e'i* or "The Red Man" of the lightning. A member of the common Indian laity would not have dared to touch even the bark or splinters of the Red Man's tree for fear of the vast voltage of ill-luck which might penetrate and nullify his miserable soul. Even if he did not lose his life within seven days for the attempt, at least his hands and feet would be riven with torturing cracks and sores! If the ashes of such an ill-fated tree were used for lye in soapmaking they would be sure to create "consumption" or tuberculosis.

Ball players anointed themselves with a concoction prepared by their conjuror from the bark of a thunder-riven tree to give them the power of a lightning stroke to their opponents. They also painted their faces with charcoal prepared from its splinters. Splinters or bark so used were always taken from the east side of the tree as was the case also with roots or bark for medicine purposes. The beaten bark of it soaked with seeds for planting would always insure an excellent crop. On the other hand, any lightning-struck wood thrown by accident or otherwise within a field where there were standing crops would cause them to wither and die. Also any person



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In Cherokee tradition, the trees had souls, could talk like men and, although very powerful, the ordeal of staying awake for seven days and seven nights was too much for many of them

venturing into a field where stood a lightning-struck tree would suffer very ill effects within seven days.

Southern negroes have a very well-defined superstition similar to those of Indians and no doubt inherited from association. They will not knowingly hew or cut a tree for firewood which has been struck by lightning. According to the Cherokee, arrows fashioned from the wood will fly with the swiftness and destruction of a thunderbolt and only need to be pointed in the general direction of the quarry! It is not explained why the touching of the arrow itself would not bring on ill-luck; but the ways of the Indian and his shaman are sometimes past understanding.

Sourwood spits were used by the Smoky Mountain redskin for roasting game as the wood was supposed to give the meat a very desirable flavor. The real reason was probably that green sourwood makes excellent spits because it does not burn readily. Pounded walnut bark and leaves were often used by



Fervently the old Cherokee conjurer prayed to "Asga'ya Gi'gage'i"---the Red Man of the Lightning---whenever he took another tree

or *kanahe'na*, and the whole gulped down with great gustatory satisfaction minus either salt or cleaning very often! Such a catch-your-own-fish cafeteria idea would not obtain in the present days of sanitation but was a common backwoods practice among the Indians of colonial days which no doubt appalled the sturdy venison-fed stomachs of early Anglo-Saxon settlers. An expectant Cherokee mother was never allowed to wade in such walnut-bark water from the belief that such a procedure would cause the premature birth of her child.

The laurel, both *kalmia* and *rhododendron*, was used for

(Continuing on page 300)

squaws to stupefy fish wholesale so that they might be easily caught.

A dam was first made in a small stream to confine the fish then leaves and bark of walnut trees were bruised upon the rocks upstream. In a short time the fish, groggy with the mixture, floated belly upward and were easily gathered. They were then boiled in a very unappetizing mixture of sour corn meal,



A thicket of Rhododendron in the Great Smokies. This wood was never used by the Cherokees as fuel, because of its sacred use as "medicine"

Ancient Box Trees of England

By H. H. WARNER



NEAR the picturesque little village of Welwyn, Hertfordshire, England, some interesting discoveries have recently been made which give a fresh insight into the life of those who resided there in the first century of the Christian era. It has been suggested that members of the Royal House of Casswallawn, or Cassivellaunus, to give this British King his Romanised title, resided there and were there buried. Quite recently the tomb of a beautiful Roman lady was discovered in this neighborhood, vouched for by the fact that her bust was placed within the tomb and it shows that she possessed a clear cut Greek profile. A necklet hung about the neck, and close to this lay her rings, toilet set, bottles of beautiful form and coloring, and all the little nicknacks that every true daughter of Eve delights in. Some unusual specimens of Samian ware, which bear the maker's name, Albuci, have also been found and other pieces of the best ware are signed by Divinatus and Centusa. But what interests all lovers of trees most is that when some cinerary urns were discovered a number of box leaves were found around them.

Martial, writing in the first century, thus touchingly refers to the burial place of a

friend whom the Earth of the Labici covers with its light turf. "Accept from me," he says, "no ponderous tomb bowing under a weight of Egyptian Stone, but accept these fragile box trees and the dark shade of the vine kept green by my tears."

The early Christian Church adopted many a custom from older forms of worship; plants used to decorate Roman temples were afterwards used by converts to decorate Christian places of worship.

While holly was chosen for use at Christmastide, the box was considered the proper decoration from Candlemas Day up to Palm Sunday or Easter Eve, when the yew and palm were chosen.

Old Herrick writes:

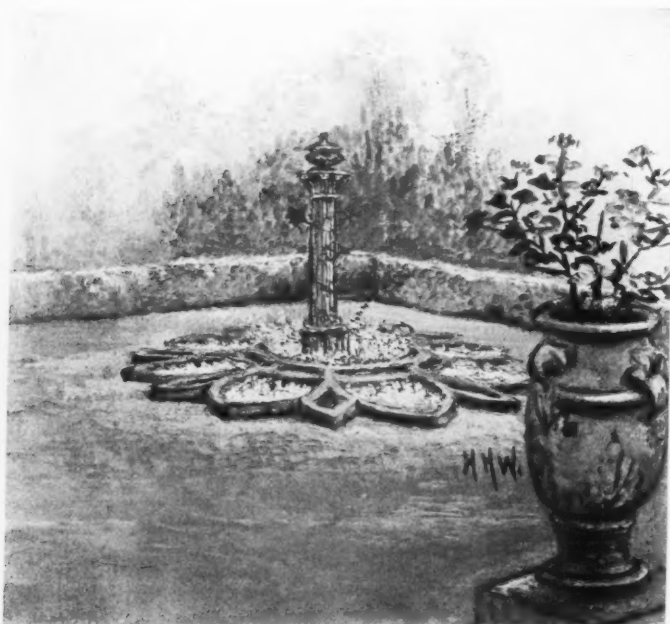
"Down with rosemary and bays,
Down with mistletoe;
Instead of holly now upraise
The greener box for show.
The holly hitherto did sway,
Let box now domineer,
Until the dawning Easter Day
Or Easter Eve appear."

The Scriptures themselves suggested the use of box, for we read in Isaiah (*Chapter LX:13*), "The glory of Lebanon shall come unto thee the fir tree, the pine tree, and the box together to beautify the place of thy sanctuary."

Until very recently there was a row of box trees at the side of Hermitage Road, Hitchin, Hertfordshire.



In the grounds of the ancient Priory at Little Wymondley is found this "natural cloister" of box, undoubtedly offshoots of their great forbears—planted about 1230, at the time of the erection of the Priory in the reign of Henry III. Their central trunks were undoubtedly cut down in ages past



The adaptability of box as edging is exemplified in the beautiful old Italian Gardens of the late Earl Brownlow's palace at Ashridge. Here it is seen in the perfection of its most artistic use

This road was cut through an ancient garden, and here there were about forty trees, the largest of which was thirty-five feet high and the trunk of it was thirty-four inches in circumference. These did not die of old age; rather, in spite of protest, they were ruthlessly cut down by their owner. Mr. Reginald L. Hini, of Hitchin, waded through a large number of pre-Reformation documents to trace their origin and at length discovered that they were planted in the garden attached to the Brotherhood House of the Benedictine Order in the reign of Edward IV, 1461. All through the centuries they had been cared for and the limbs of some were carefully supported by chains. They were the finest box trees in England, if not in Europe, and a few minutes' work with a barbarous and blundering ax reduced them to nothing but a memory. An old building can be pulled down and re-erected, but an old tree, never. Mr. Hini pointed out that the penalty for wantonly destroying a tree in the reign of Edward IV was death by hanging, and now many Hertfordshire folk are saying what a pity it is the act was repealed.

The box appears to have been a special favorite with the Romans. Not only did they use it in their mourning wreaths but in the decoration of their temples and private houses. The trees were also much used for the topiary work which they delighted in. Pliny records that his gardens at Tusculum contained the figures of birds and beasts carved out of living box. Centuries after this Roman civilization had disappeared in England and their beautiful villas and gardens had passed away, the style of gardening which they adopted was kept alive and reintroduced by the monks and friars of the early Church. It would seem, then, that the most probable place to find any ancient box trees would be in any traces of old monastic gardens. Their love of topiary

work still lingers amongst us and some ancient examples happily survive. As an old writer quaintly puts it:

"The wonders of the sportive shears,
Fair nature misadorning, there were found.
Globes, spirals, columns, pyramids and piers,
With spouting urns and budding Statues crown'd.
And horizontal dials on the ground
In living box the cunning artists trace,
And galleys trim, on no long voyage bound,
But by their roots e'er anchored to one place."

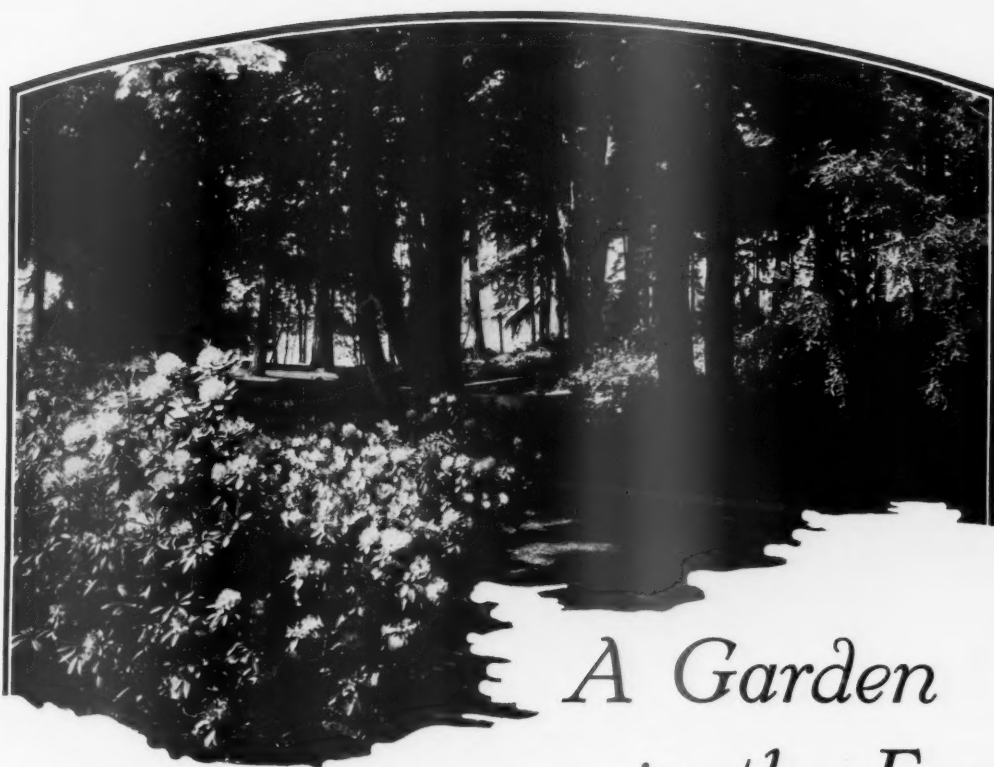
Fortunately Hertfordshire can boast of another wonderful grove of ancient box trees which grow in the grounds attached to the ancient Priory at Little Wymondley, near Welwyn and Hitchin.

In a paper on Wymondley Priory, written by Mr. W. H. Fore, F. S. A., reference is made to these trees: "The orchard still exists, surrounded by box trees some twenty feet in height, which form a natural cloister." The late Mr. William Ransom wrote a short account of these trees for a journal published by the Hitchin Natural History Club, and he there states that "they were probably planted soon after the erection of the Priory founded by Richard de Argentine, about 1230, in the reign of Henry

(Continuing on page 316)



In this ancient box tree in a cottage garden at Hoddesdon, in Hertfordshire, is seen an example of the art of topiary as practiced long ago, where "the wonders of the sportive shears Fair Nature" misadorns



A Garden in the Forest

By ANDERSON McCULLY

THE garden in the forest is not for all of us, but rapid transportation is making possible many retreats that a few years ago were hopelessly removed. Occasionally this is a magnificent walled affair with a great water garden, marble benches, and a dwelling far more handsome than the one in town. Sometimes it is a rude shack near a good fish stream, or where the game is good. More often it is a compromise, for that so called weaker half of our family life is very prone to develop decided strength when any radical curtailment is attempted in the service end of even our most rustic lair.

Fortunately they too feel the hushed stillness beneath the tall trees, the soft tread of pine needles, see the delicate tracery of green ferns, and listen to the swish of branches and the trickle of waters, so that they do not call so constantly for spade and hoe and strenuous labor as they do in the gardens in town.

But even with all the forest's innate charm, we can garden just a little, lazily perhaps, accent our own retreat with color just a bit brighter than the dark greens of the summer woods. Nature splashes some of her loveliest hues beneath the trees, but she places most of these early in the year, hides them away in vacation months—hepatica, trilliums, dodecatheon, camassia, anemones.

When we garden here, we must remember to garden for

the months we spend with them, usually the high summer. We must remember to choose those plants that can withstand not only shade, but the hungry and thirsty roots beneath the ground. In these days of full summer, we will not feel inclined toward over much exertion, and true garden friends will have a sturdy independence that can shift much alone.

They will be larger too, than are the city blooms, just as the trees above them are larger than the shrubbery backing in town.

One of the best flowers we can use in such a setting is our old fashioned friend, the foxglove, recently fresh from face lifting operations, as it were, in the horticulturists' beauty parlors. The newer Shirley strain has done much to improve both size and habit, and runs from white to a deep rose. The foxgloves, while usually treated as biennials, seem as a rule able to reseed themselves and increase quite lustily. Their general blooming period is June.

TRILLIUMS

This was a place
Where trilliums stood
Like altar candles
In a wood.

Touched to a white flame
By the sun,
Snuffed at dusk
By a shadow-nun.

ETHEL ROMIG FULLER

Not so truly of the woods, but adaptable at that, are many of the border *campanulas*, or bell flowers. In the North some attempt should be made to get them into an open position so that they may have sun; but farther south the shade is desirable. *Campanula medium* and *Campanula calycanthemata*, the cup-and-saucer varieties, are both biennials, though I have found them always capable of caring for their own progeny. There have been some remarkable improve-

ments in the cup-and-saucer varieties, and there are exquisite shades of clear pinks, lavenders, blues, purples, and white. They also last well as cut flowers.

The perennial *Campanula persicifolia* is less showy, but charming, reliable, and sturdy in the vacation garden. *Campanula pyramidalis* is very showy, but not always to be trusted as to hardihood in cooler gardens. In fact, they are all better for a leaf mulch of two or three inches, from Philadelphia north. There is also on the market a Russian introduction, *Campanula lactiflora alba magnifica* with six foot spikes, and large snowy white flowers. The blooming time of the campanulas follows the foxgloves and tends to hold through July.

While delphinium, or larkspur, have the magnificent spires of color and the blooming season through July to make them particularly attractive for the forest garden, they do have two drawbacks for this placing in that they prefer the sun, and that their roots are deeper striking and grosser feeders than the foregoing, so that tree roots are very prone to crowd them out. A few strong clumps can be made very striking, however, particularly if they are given a little richer fare in late fall, and again in summer.

Where there is moisture, the astilbe is particularly desirable, having a long summer period of bloom which can be further lengthened by choosing several varieties. Betsy Cuperus

is a white with pink center, and drooping flower spikes that approach two feet in length. *Grandis rosea magnifica* is of similar coloring, and even larger. These are plants from five

to six feet in height. Closely allied are the *aruncus* or goats beard. *Sylvester spiraea aruncus* carries its plumes of feathery white in June and reaches about four feet in height. These are all good for water side planting, or they may be placed in ground that is moist. While almost any soil will please

them, they do insist upon this moisture, and appreciate a richness in their diet.

The columbines are unusually adaptable to naturalizing, and border finely a woodland path, both with their fern-like foliage and their nodding graceful blooms. The European flower *Aquilegia vulgaris* will stand the most abuse, but its blooming period is rather early for the summer garden—usually late April and early May. The Golden Columbine, *A. chrysantha* has the longest flowering, holding throughout the summer and into the fall. This is a yellow native species with extremely long spurs. *A. formosa truncata*, from the Pacific Coast, is a glorified orange. The newer long spurred hybrids bloom in July, often longer, and are extremely lovely, but should have a little more at-



Above—A Rustic Pergola, where Panicles of Purple Wisteria will Hang, to Be Followed Later by Showers of Rambler Roses. In the Insert Below are Foxgloves, True Woods Plants, which Flaunt Their Beautiful Stalks with Equal Effect in the Sun and Shadow of the Oaks, or Against the Darker Green of Conifers.

tention. They are easily managed, but not quite equal to holding their own against native growth without some aid from the garden maker. A rich light soil, partial shade, and

moisture are the columbine preferences, but they are of the world's denizens who seem thankfully to accept what comes their way.

Among the loveliest of the forest blooms are the woodland lilies, but discrimination should be used to obtain those that do care for such conditions. It is best to plant them all where the sun filters through part of the day. Among the best for this purpose are the July flowering *pardalinum*, *parryi*, and *humboldtii magnificum*, all of which should be planted about five inches deep in moist, but well drained, peaty soil or leaf mold. It is well to lay the bulb itself in a little fine gravel or sharp sand. *Columbianum* needs a planting about one inch deeper in a similar situation, but will stand a little more gravel. It is somewhat smaller than these and rather resembles *humboldtii*.

Among the June lilies are *washingtonianum*, *hansonii*, and *monadelphum*. *Washingtonianum* is one of our best from the mountains of the Pacific Coast, and tends to hold its bloom through into July. The reflexed and blotched flowers are wine colored, and the bulbs should be set about twelve inches deep, and tipped to the side. It will need a moist mixture of leaf mold and gravel, and is one of the few wood lilies that will endure lime. *Hansonii* should also have a deep planting, eight to ten inches. This is an easily cultivated Japanese species, and will also tolerate lime. *Monadelphum* takes the five inch planting, sometimes reaches six feet in height, and bears as many as thirty flowers on a stalk. These are a deep straw color spotted with black. The dwarfier eighteen inch *rubellum* is also a June bloomer, and should be set six inches deep in a gravelly soil. It demands the trees, or large shrubs at

least, to give of its best. It is a fine rose, shading to pink, with yellow anthers.

For late blooming lilies, *superbum* and *speciosum* are probably best, though the latter is not a woodland lily, but is amenable to such conditions. It blooms through August and September and should be set ten inches deep in a good rich top soil. The August blooming *superbum* is a real woodland lily that despises lime and demands a ground cover. It at-

tains eight feet, carries sometimes as many as twenty blooms, and should be planted five inches deep in a moist peaty soil.

For shrubs we have the rhododendron, so particularly at home beneath the trees, and with a long season of bloom if the right varieties are chosen for the especial time desired. There is also the sweet pepper bush, and some of the native lilacs are woodland plants.

We should not forget the value of vines in the forest. If sun filters through, no vine is lovelier than the wisteria flinging from tree to tree, draping its long panicles of bloom. Set it in very rich soil away from the trunk itself, then

train it over. Unfortunately for the vacation garden, their bloom comes rather early—May. They do, however, frequently give a second though lesser one in August and September. Sometimes a sturdy rambler rose of the American Pillar type can be used to good advantage on the house or rustic pergola adjoining if sun filters through sufficiently. The common honeysuckle *Lonicera periclymenum* has a long period of bloom from June to September, is happy under trees, and bears much shade.

Water is always a beautiful adjunct of woods. Water lilies are not credited with relishing shade, but they do



Tall Trees Brood Above the Lily Pond

bloom in forest pools beneath gigantic Douglas firs. Marliac hybrids seem about as all around satisfactory as any I know, and bloom well through the summer. Remember that all water lilies are very gross feeders, and that the lighter tones will show up better in the woodland pool.

In the true forest garden, bark and saplings go far toward tying the necessary house and garden furnishings to the trees about them. Sometimes the house itself is bark covered, or built of logs, despite modern plumbing elegance within. Window and porch boxes of the same bark can be gay with color, particularly if as generally does happen where the house is built, the sun filters through to them. In this case dwarf snapdragons, heliotrope, lobelia, Kenilworth ivy, geraniums, and nasturtiums are all possible. In any case, dwarf ageratum, fuschias, morning glories, petunias, and trailing vinca may be used. A little restraint is sometimes necessary here, that plants of too great sophistication are not so closely allied to the forest. Some will question the use of geraniums and fuschias here. I purposely failed to include the tuberous begonias, crotons, and others of their kindred.

Remember in fixing the boxes that they must first of all

have drainage. They should be at least eight inches deep. The soil should be unusually rich to atone for the crowded root conditions. It is wise further to work in bone meal or other fertilizer through the summer, and watch carefully that they do not dry out. Where there is a little lawn, possibly beach, garage, outdoor dining room, or other feature to lead to, the rustic pergola can be made an unusually attractive feature.

I have kept to the summer garden here. Those who go to their retreats earlier in the year will of course have many of the spring flowering plants to welcome them—the bulbs that may be naturalized, camassia, scilla, muscari, crocuses, smaller trumpet daffodils, poet's narcissi, anemones, hepaticas and bunchberries.

A forest garden too may be made up of forest wildlings, but here I have spoken of it rather as the garden set within the forest, one that has chosen frankly of those things most adaptable to its conditions from among our more familiar city and suburban gardens: and in inviting these, I have asked only those whose dispositions will have a wholesome respect for our own vacation leisure.



Plant a White Birch on Mother's Day!

MOTHER'S DAY, May 12, is rapidly taking on a new significance throughout the country. It is becoming tree planting day—trees dedicated to honor motherhood. The white birch (*Betula alba laciniata*) has been designated as the official Mother's Tree by The American Forestry Association, under whose auspices Solan Parkes planted the first Mother's Tree on the shore of Antietam Lake, at Reading, Pennsylvania, in 1923. The custom of planting these trees has been nationalized by the Association. One has been planted on the grounds of the National Capitol to honor the Mothers of the Nation, and another on the lawn of the White House to honor the Mothers of the Presidents. A white birch has also been planted at Fredericksburg, Virginia, in honor of Mary Washington, the Mother of our first President, and similar trees on the grounds of numerous State Capitols. While these plantings reflect nationally the spirit of Mother's Day, every state, every county, every community and every individual has the opportunity of planting, through the choice of a National tree adapted to a wide climatic range, a living monument to Motherhood.



The Marker on the Initial Mother's Tree



Working Camera Miracles with Birds

By BEN EAST

WHAT would you do if you had driven three hundred miles, had paddled a leaky scow across a wilderness lake, set up a small cloth blind, cut cedar and balsam branches to cover it and hide it from sharp and wary wilderness eyes that were sure to be on the lookout for just such trickery, and then had sweltered in the stifling heat of the tiny tent for more than an hour—what would you do if you had done all these things for the sake of making one of the rarest bird pictures ever recorded by the lens of a camera—and then you sneezed and spoiled your chances?

Probably you would give up bird photography forever. That is what most of us would do. But if you were Walter Hastings you would calmly take down the blind, paddle the scow ashore, drive the three hundred miles home—and the next week come back and do it all over again, finishing up with the finest set of pictures ever made of a mother loon on her nest, to say nothing of a pair of baby loons besides.

It all came about this way. Pictures of loons are about as scarce as the proverbial hen's teeth. This great northern diver nests on the wilderness lakes of the North, usually on a

small island. Her nest is built so close to the water that small waves lap against it, and at any sign of danger the brooding mother is off the nest in a long dive that carries her well into the safety of the open lake before she comes up. Small wonder that loon pictures are rare.

Hastings had had word of a pair of loons nesting on an island in a forest-girt lake far to the north. He made the journey, found the nest and prepared his blind. Every bush, every blade of grass between the blind and the nest was painstakingly cut away in order that nothing might spoil the big chance when the mother came back.

She came at last, wary and suspicious, swinging back and forth along the shore, venturing closer a foot at a time. At last she was all but ready to clamber out upon the nest—and then that fateful sneeze!

He restrained it as long as he possibly could, Hastings will tell you, grinning at the memory, but the sneeze would out at last, with the



"Camera!"

disastrous results recorded heretofore.

And just who is this Walter Hastings anyway?

He is one of the foremost photographers of wild life in the

whole United States, surely foremost in the middle west. As staff photographer of the Michigan State Conservation Department, he made, last year, six complete reels of the bird life of that state, showing the home affairs of just about all the feathered clan from tiny songster to royal eagles. In addition to these bird reels, which he calls "Wild Wings," and which were shown to hundreds of thousands of persons last winter as a major part of the Conservation Department's educational campaign, Hastings also made two full reels of moose pictures, pictures of deer, pictures of forest fires, and countless other outdoor subjects.

It is in his remarkable studies of the home life of birds, however, that this photographer excels, and it is in making intimate, hitherto impossible pictures of birds that he finds most joy.

In 1921 Hastings was a little-known naturalist, living in the equally little-known town of South Lyon, a village in southern Michigan. His vocation at that time was growing snap-dragons, chrysanthemums and other products of the florist's art in a big growing plant that was one of the chief industries of the village. Studying and photographing birds was only a hobby with him then—but a hobby to which he zealously devoted every minute of his spare time by day and more than a fair share of the nights.

He made an important record that year in the discovery of the first black-crowned night heron rookery ever located in Michigan. The rookery was found in the St. Clair Flats, a wide expanse of marsh and open lagoons at the northern end of the lake of the same name.

Trained bird men, long on the lookout for a night heron colony within the borders of the state, had searched that ground thoroughly only a year or so before. They laughed at Hastings when he proposed his expedition.

Nevertheless, he went ahead with his plans. He had heard a rumor of a big band of birds nesting on Harsens Island, and they were renowned for their racket after sun-



Hastings points his camera at a bald eagle's aerie

set. He ran the rumor down—and came home with an excellent set of heron photographs, a set or two of eggs and a few specimens of the adult birds as well, by way of clinching the argument.

From that time Hastings' star as a bird photographer began to rise. Recognition from the State University and the State Agricultural College followed close on the discovery of the heron colony.

In the spring of 1927 Hastings went to Barro Colorado Island in the Panama Canal and to the Pearl Islands in the Gulf of Panama as staff photographer of an expedition sent out by the University of Michigan.

He returned with pictures of toucans, pelicans, man-of-war birds, booby birds and other seldom or never photographed feathered folk, and he came back to take up his duties in the educational division of the State Department of Conserva-

tion, with orders to make pictures of Michigan's wild life. The greenhouse had been sold. The hobby had become the vocation. "Wild Wings" and the other pictures now in the Conservation Department's files are largely the fruits of his perseverance during the years when his bird work meant a sacrifice of his own time and funds.

Nor are his experiences now that he has achieved his goal a mere matter of routine by any means.

Newsreel photographers who risk everything to "get the picture," have nothing on this wilderness camera hunter when it comes to thrills. He has clambered up to dizzy treetop heights and hung in a wind-slung crotch for hours, strapped fast with life belts, while a late spring snow storm raged through the lofty branches. He has crawled through black,



Two young bald eagles, aloft in their nest, sixty feet high. They were banded by Hastings and the author

open pools of mud, breathing the rank vapors of steaming summer swamps, while mosquitoes swarmed over him in ravenous hordes. He has lain for hours hidden and cramped in his tiny blind, having scant protection from the glaring sun, while sweat ran in streams down his insect-bitten face. He has disputed the right to a wilderness trail with a bull moose

(Continuing on page 300)

The Paulownia Tree

By WILLIAM ALPHONSO MURRILL

VISITORS to the Lorillard Mansion on the Bronx River in New York City, often take a peculiar interest in a rare old specimen of Paulownia, stand-

ing near the southeastern corner of the building. It is nearly eighty years of age and measures about five feet in diameter, three feet above the ground. Although long past its prime, it flowers and bears fruit nearly every year.

In spite of its healthy appearance, however, a deadly disease is spreading through the trunk that will eventually destroy it. There are already cavities in it used by birds and squirrels, and several years ago a swarm of bees located in a hollow in one of the larger branches, evidently attracted by its handsome flowers.

The botanical name of this tree is *Paulownia tomentosa*, sometimes called *Paulownia imperialis*, and it is apparently the only arborescent representative of the figwort or foxglove family grown in North America. About eight species are recognized in the genus, all from China or Indo-China, but most

of them are little known here and are probably less hardy than the common species. They are large or medium-sized trees with immense leaves and showy terminal panicles of

purple or nearly white flowers resembling the foxglove in form. The genus was named in honor of the ill-fated Anna Paulowna, daughter of the Emperor of Russia and hereditary Princess of the Netherlands.

The Paulownia is called *Kiri* in Japan, where it is much cultivated, and *Too* or *Kak-too* in China, where it grows wild. In England and America it is often called Princess tree. The famous Japanese hero, Taikasma, designed his coat of arms from its flower and leaves.

The occidental history of the Paulownia dates only from 1835, when it was grown from seed in the *Jardin des Plantes* in Paris. It

was first cultivated in a greenhouse, but was later found to do better outside. The first tree grown fruited in its eighth year and later attained a diameter of over three feet.

The tree was probably introduced into America between



The magnificent old specimen of Paulownia standing on the Lorillard Mansion lawn on the Bronx River in New York City. It is eighty years old, long past its prime, but still bearing flowers and fruit in profusion



A thrifty young *Paulownia*, springing up in rapid first-year growth and carrying the typical large leaf

1842 and 1845 in the form of seeds, which were grown in some of the prominent nurseries. This nursery stock was doubtless distributed far and wide and gave rise to the first trees to produce and scatter seeds in various parts of the country. It would be interesting to locate any of these original trees, and especially any that may still exist in the vicinity of our larger cities.

Young trees have been known to grow twelve feet in a single season, and increase their diameter four or five inches in three years. This rapid growth makes soft, light, coarse-grained wood of little strength but durable when not exposed to the weather. It is valued in Japan for cabinet work and for the charcoal used in the best fireworks.

A curious discovery was made in Paris in working with the first seedlings. During the first year, they made no wood and consequently died down to the ground, sending up one or two hardy sprouts the following spring with leaves nearer their adult form and structure. The tree has been spoken of as a "large herb," resembling as it does in some respects, when young, many of the large tropical herbaceous plants.

In America, the *Paulownia* has escaped from cultivation and grows wild from southern New York southward along the Atlantic and Gulf coasts to Florida and Texas. It is also a common tree in Indiana and California. North of New York city, the flower buds are usually killed during the winter, although the tree itself may be hardy as far north as Massachusetts. In Montreal, it is killed to the ground every year and new shoots spring up which are highly ornamental as foliage plants. Similar growths are

sometimes secured farther south by cutting back the trunk regularly.

As in the case of the *Ailanthus*, the rapid spread of the *Paulownia* is due to its adaptation to almost any soil, its quick growth, easy propagation, and comparative freedom from diseases and pests. Great numbers of winged seeds sift through the slits in the ripe capsules and scatter in every direction. Shoots arise from the roots or from any part of the stem that may be covered with soil. Cuttings may be made not only from the root and green wood, but also



One of the large leaves that characterize the *Paulownia*, a naturalized Oriental tree, and are conspicuous in its earliest growth

from the young, unfolding leaves, thus emphasizing the peculiar herbaceous character of the tree.

As a shade tree, it may be used for parks, lawns, and avenues, but is hardly desirable for ordinary street planting. Light, deep loam is the best soil for it, although it grows fairly well in poorer soils. The flowers are large, delicately scented, and attractively colored, but they appear before the leaves and thus lack a suitable setting. The conspicuous ovoid pods remain on the tree during the winter and give it an unattractive appearance. The terminal branches, also, exhausted by fruit bearing, usually die back three or four feet and have to be removed.

Two varieties of the species are recognized. Variety *pallida* has pale-violet flowers and leaves that are obscurely green above. Variety *lanata* has flowers of the typical color, but its branches, leaves, and flowers are conspicuously woolly-pubescent, which makes it somewhat hardier. It is also larger and better adapted to cultivation than the ordinary typical form.

Fires and Forest Growth

By E. L. DEMMON

Director, Southern Forest Experiment Station

IT is assumed that most of us recognize the importance of timber growing to the South. The fact that fully two-thirds of its total land area is at the present time more valuable for the production of timber and forest products than for any other purpose only serves to emphasize this statement. The bulk of the South is comprised of cut-over forest lands. It is generally conceded that no great proportion of these will be needed for agriculture for many years to come. Unless these lands are managed for the production of timber crops, their idleness must reflect unfavorably on the economic future of the region.

Commercial forestry practice in the South cannot succeed without adequate fire protection. Largely because of fire, there are today millions of acres of forest land in this region

producing but a fraction of their potential growth of wood.

There is adequate evidence that if fires could be eradicated new crops of trees would soon appear where reasonable measures of forest management are adopted.

Great strides have already been made in controlling forest fires. There are many evidences throughout the South that lands can be successfully protected and at a reasonable cost. It is a regrettable fact therefore that the annual toll taken by fires in this region is so high. Statistics compiled by the United States Forest Service show that in 1927 eighty per cent of all the fires, ninety-five per cent of the total area burned over, and eighty-nine per cent of the forest fire damage in the United States occurred in the southern region. These figures have been submitted by state forestry officials



Photograph by United States Forest Service

Twelve years old

Three years old

What a difference a few fires make. At the left are shown twelve-year-old longleaf pines growing on land burned over annually. The young trees are only two and one-half feet high. At the right is an example of longleaf pine growing under protection from fire. Although only three years old, the young tree reaches a height of eight feet

in those states with organized forestry departments, certainly the most competent source for such information. That such losses are largely preventable is shown by the fact that the greatest proportion of forest fires are the result of human agencies. It is only through organized preventive measures, however, that fire control can be successful.

Fires in the South are not of the spectacular nature encountered in the western United States where they often

a number of plots in second-growth pine stands throughout the South. These plots are burned at regular intervals and careful observations are taken periodically of the mortality and growth of the surviving trees. Other more extensive studies have been made of the effect of single or repeated fires. The results of some of these findings will be presented here.

Fires cause damage in a number of ways. The most apparent effects are the destruction of merchantable timber and improvements, such as fences and buildings. Other aspects of fire damage, although not so apparent, may be even more important. Tree growth is retarded, small trees are killed outright, larger trees become more susceptible to attacks by insects and disease, game and wild life are destroyed, the recreation value of forests is lessened, soil fertility is impaired, and erosion and washing away of valuable top soil follows with



get into the tree crowns, causing complete destruction to forest growth over large areas. On the contrary the ordinary fire in the southern region is commonly known as a ground or grass fire, usually occurring during the winter season. The general opinion seems to be that these fires do little or no damage to the forest. Such an erroneous idea fits in well with the common practice of winter burning which has been nearly everywhere prevalent in the South since settlement took place about 100 years ago. It is true that such fires rarely kill large trees outright, but they do take an immense toll from the forest tree seedlings.

The seriousness of the problem is recognized by foresters and others who have made a careful study of the fire situation. In order to obtain definite information on fire damage, the Southern Forest Experiment Station has carried on a number of fire studies ever since the Station was established in 1921. The information thus gathered should be of considerable value to forest landowners and public agencies engaged in combating fires.

In the conduct of fire studies, the Station has established



The effect of fire in the woodlot. Above is shown an area protected from fire, on which at forty years of age the forest growth has a volume of 1,793 cubic feet an acre. The woodlot shown below has been burned over annually and its wood yield is only 664 cubic feet an acre at forty years of age

its consequent damage to watersheds. The total damage caused by fires is an extremely intangible quantity and dependent on so many contributing factors that precise dollar and cents loss figures can never be arrived at exactly. There are many advantages, however, in having a basis for figuring damage. Such a basis should result from the Southern Station fire studies.

Winter fires, coming at a time when the tree is dormant,

have less killing effect than fires which occur during the active growing season in the spring and summer. Small seedlings and trees are more susceptible to fire damage than larger trees. Damage is more severe during periods of drought. On areas protected from fire for a number of years there is some increase in the fire hazard but this is more than offset by the advantages from complete protection. Dense undergrowth or slash left on logging areas markedly increase the fire danger. Dense thickets are more seriously injured by fire than are trees growing in the open. Some species of trees are much more resistant to fire injury than are others.

The effect of fire on forest tree seedlings will be considered first. The oldest station plots for the study of the effects of fire are located at Urania, Louisiana. Two plots of fifteen months' old longleaf pine seedlings were fenced in 1915; one plot has been burned

difference in volume growth is much greater, the burned trees showing considerably less than half of the volume produced under complete protection. A graphic presentation of the results from this experiment has been widely used in education posters in various parts of the South.

In northern Louisiana a summer fire which burned through



The effect of fire on the height growth of longleaf pine seedlings. The plot shown above has been protected from fire since 1915, while the area below has been burned annually over the same period

a cut-over longleaf pine area caused the death of one-third of all the trees over eight inches in diameter. These trees represented the remnants of the virgin stand that had been left when the original stand was harvested about twenty years before. Previous to a summer fire which occurred in a longleaf pine cut-over area in northern Louisiana the tract was well stocked with over 1000 longleaf and loblolly pine seedlings to the acre, ranging up to fifteen feet in height. As a result of this single fire, seventy-

over each winter, the other protected. Observations have been made at intervals on the survival and growth of these pines. This experiment illustrates the wonderful fire resistant qualities of the longleaf pine, as even on the burned plot most of the seedlings have survived the annual winter fires. The effect on growth, however, has been very marked. At the age of ten years the average sapling on the burned plot was less than one-half as tall as on the protected side. The

two per cent of the longleaf and all of the loblolly seedlings were killed. Assuming that the cost of planting longleaf pine seedlings amounts to from four dollars to five dollars per acre, this single fire resulted in a direct loss of at least three dollars per acre and several years' tree growth aside from its effect on the development of the trees which survived the fire. A fire coming in the winter time would undoubtedly have caused less damage. It may be

of interest to record that the highest percentage of mortality among the longleaf seedlings occurred in those between six inches and four feet in height. This range in height above ground corresponds with the height of the flames, indicating that the longleaf pine seedling is most easily injured by fire when the tree is between five and seven years of age, although before and after that stage its resistance to fire is remarkable. Studies of fire damage to slash pine seedlings have been made in south Georgia and south Mississippi. A spring fire in south Georgia killed eighty-five per cent of the slash pine seedlings seven years old. These seedlings ranged up to sixteen feet in height. A summer fire in the same locality wiped out seventy-four per cent of a stand of five year old seedlings. Where underbrush was dense the mortality reached eighty-eight per cent; where brush was scant,

but sixty-four per cent of the trees were killed. In both of these instances, however, all seedlings under three years old and under four feet in height were destroyed.

On two separate areas of young slash pine in south Mississippi, summer fires caused severe damage to reproduction. Seventy-nine per cent of a five-year-old stand was wiped out and sixty-five per cent of a six-year-old stand was destroyed. In each of the instances just cited no fires had occurred from the time the seedlings had become established. Fires coming earlier in the development of these stands would undoubtedly have destroyed a larger proportion of the trees because of the greater susceptibility to fire damage when less fully developed. Each additional year of complete fire protection assures better chances of resistance to any accidental fires that may occur.

A winter fire in southeastern Louisiana killed seventy-seven per cent and eighty-five per cent, respectively, of two stands of loblolly pine seedlings. These seedlings ranged up to eight years old and in height from one to twelve feet. All of the one and two-year-old seedlings or all those under two feet in height were entirely wiped out. There still remained 570 and 870 living seedlings per acre, respectively, as a nucleus for a new stand.

In eastern North Carolina a winter fire swept through an eight-year-old loblolly pine thicket that had been subjected to periodical fires in the past. As a result of this last fire, ninety per cent of all the trees were killed and none under four feet high survived.

Shortleaf pine differs from the other southern pines in its ability to sprout following fire. Even with this advantage

it cannot withstand annual burning. On an area in southeastern Oklahoma that had been cut over four years previously a stand of over 9000 shortleaf pine seedlings per acre had become established where no fires had occurred following the cutting. On an adjacent area which had been swept by fires each year since the cutting, 130 seedlings per acre were found to have survived and these were badly stunted.

In eastern Texas fifty-nine per cent of a stand of four-year-old shortleaf pine seedlings survived a fire. Most of these came through only because of their ability to sprout up from the roots after the tops had been killed back.

In a ten-year-old stand of loblolly pine near Urania, Louisiana, but four per cent of the trees survived a summer fire that came during a period of drought. Fires during other seasons of the year on

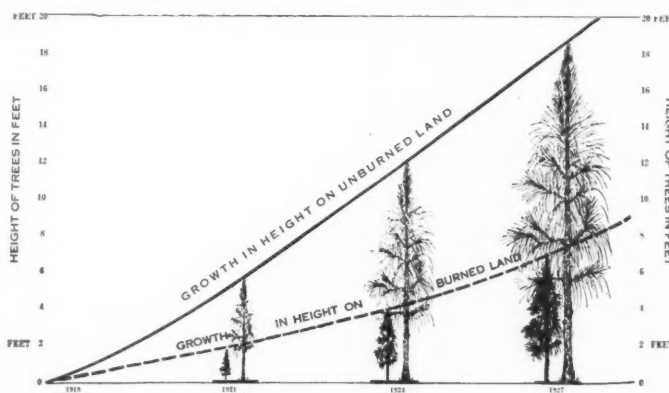
similar tracts nearby have killed few trees, which points to the extreme hazard existing in very dry periods during the growing season.

In the spring of 1927, fires in southern Georgia, which occurred following a two months' dry period, were very destructive to both old as well as young timber. In ponds that had entirely dried out, practically every slash pine and cypress tree was killed. On the higher ground nearby longleaf pine also suffered severe damage, particularly those trees which had been turpented. On longleaf areas that had not burned for two years previous, fifty-six per cent of the turpented trees were killed, whereas but thirty-two per cent of the unturpented succumbed. Fires readily ignite old turpentine faces and the heat thus generated is often sufficient to cause the death of the tree. This holds true for most turpentine areas where fire normally gets in after the turpentering operations have been completed.

A study of fire damage was made on a shortleaf and loblolly stand in northern Louisiana where fire had burned through the slashings six weeks after logging had taken place. One hundred and forty trees per acre, ranging from four to fourteen inches in diameter, were left after logging. After the fire had burned through this stand an average of but twenty-eight per acre or one-fifth of the trees remained alive.

Even mature trees in the virgin pine forests are injured and often killed as a result of grass fires which commonly burn in such stands every year. Serious injuries often begin with fire scars which become larger with every fire until

WHAT WOODS FIRES DO!



Comparative height growth of young longleaf pine on burned and unburned land

(Continuing on page 296)

The O'Brien Springs Bear

By E. A. Woods



OYS, whenever anybody refers to bears as dear little creatures that mind their own business if you mind yours, they stutter. All th' people that write in th' papers 'bout how you can tickle 'em under th' chin an' scratch their fleas fer 'em is plumb loco."

Immediately around the campfire there was a stir, for when Scotty began to speak about bears the monotony of the evening vanished. The smokechaser was far from being a greenhorn, and frequent were the occasions when he admitted it. He knew all about bears. There was no doubt about it—there could be no doubt. For he had met up with black bears and brown bears, fat bears and skinny bears, large bears and small bears. Yes, Scotty knew bears.

"Yes, sir," Scotty continued, after kicking at the fire. "I used to say hooray fer th' grizzlies myself. All this here talk 'bout bears fer pets seemed all right until we run acrost th' O'Brien Springs devil."

"How come, Scotty?" broke in O'Day, a fire guard, who should have known better. "Didn't get your goat, did he?"

"Well, sir, I reckon he did," confessed the smokechaser, throwing a dirty look at the guard. "Would have got your'n, too, if you'd been thar. I don't say he war th' biggest bear I ever seen, an' I reckon he warn't no bigger than a stack of hay, but he war plenty big. Anyhow, I 'lowed he war when I heard him roarin' an' growlin' 'round th' tent."

Scotty paused to look with disdain upon O'Day, the fire guard, before getting to his story. "It war jes' this way.

Mac, here,"—pointing to Ranger McGill, sitting at his side—"says he to me, 'Scotty, th' country's gettin' powerful dry, I wish you'd take that smokechaser's job at O'Brien Springs.'

"'You're th' doctor, Mac,' says I, so th' next day we moves up. Before we left, though, Mac gave me th' choice between th' cabin or a tent.

"A tent an' fresh air an' lots of it is what I want all th' time, but you bet your sweet life before I got through I war wishin' I war in a fort with one of these here machine guns.

"Well, we moved up an' got th' tent set up, fine an' dandy. Jes' as Mac war pullin' out, he says to me, 'I notice you ain't got no gun.'

"'No, I don't want no gun,' I tells him.

"'Lots of bear 'round here,' says Mac.

"'That's O. K. Let 'em come,' I tells Mac. 'Half a dozen bear more or less don't make no difference to me one way or another.'

"Well, sir, sure enough, Mac war right. Thar war lots of bear 'round thar. I used to see 'em every evenin' comin' out of th' brush, nosin' 'round camp, pawin' th' slop hole to see what they could find. Every now an' then one of 'em



"Now, steady boys—have your guns loaded and be ready for any emergency"

would get kind of sassy an' come pretty close to th' tent after I'd gone to bed. But all I had to do war to hit th' side of th' tent with th' back of my hand an' they would hit fer th' brush like a cyclone.

"But th' night that this fracas that I'm tellin' you 'bout took place, a great ol' she bear with two cubs showed up.

She war an ugly actin' ol' sister. A bit mangy 'roun th' head. Her coat war kind of rough an' she war sure terrible to look at. I hollered at her once or twice an' threw a rock or two in her direction, but th' 'onery devil didn't pay no more 'tension to them than a rattler does to a lizard. She jes' kinda turned her devilish head sideways an' th' fur on her neck raised straight up. Seems like she had a notion to come toward me, but after a while she saunters off, sorta growlin' an' mumblin' to herself.

"I never gave her 'nother thought. After supper I sat 'round readin' before I rolled in. I called Mac up an' told him what had happened, an' he comes right back with a story 'bout some bear breakin' up a tourist camp at Kilbrennan Lake jes' th' night previous, an' how th' greenhorns roosted on tree limbs all night like a flock of turkey gobblers. 'O. K., Mac,' says I. 'If I need any help I'll holler.'

"Believe me, sir, it warn't long before I war hollerin'.

"By th' ghost of Custer, it war dark that night. Not a star in sight—jes' as black as your ol' hat. After I had been in bed fer a few minutes, I thought I heard a low rumblin' acrost th' meadow. Thinks I to myself, 'I wonder if that ol' sister is figurin' on havin' me roost on a limb tonight?' Not hearin' any more growlin' I rolled over an' went back to sleep.

"All of a sudden like I war awakened. My bed war raised right up in th' air an' thar she war, tryin' to get into th' tent right under me. I had some salt an' canned goods in a box under th' bed, an' I reckon she got a whiff of that. Well, sir, thar ain't no use tellin' you I warn't scared, 'cause I war. I lets out a whoop an' lands in th' middle of th' tent. But thar I war. No gun, no ax, no nothin', an' it war as dark as an' ice cave. Do you reckon I could find a match? I've been smokin' fer forty years an' never once before saw th' time I couldn't find one.

"Finally I had sense enough to fish down in my pocket an' get one, but when I went to light th' candle th' dirty brute started growlin' an' snortin' to beat th' band, an' my nerves failed me. I stood thar shakin' like a loco sheep on a winter night. I don't know what I needed most, a gun or a drink.

"Well, sir, I got th' candle blazin' an' set it on th' table jes' as th' ol' she-devil began rootin' under th' tent again. Th' candle fell an' went out. I don't know to this day whether it war an' hour or a minute, but when I came to my senses I war hollerin' bloody murder an' cursin' worse'n a bull whacker. Cursin', jes' think of it, an' me with one foot in th' grave, so to speak. But anyhow, I had th' satisfaction of hearin' th' dirty brute growl in th' brush 'bout fifty yards away.

"I kinda pulled myself together, which war a sight better than havin' her pull me apart. So I opened th' tent an' slipped to th' phone nailed to a tree close by. In a few minutes I had Mac. 'Get my shotgun an' load it with slugs, an' hurry up,' I tells him, while th' bear war threshin' th' ground an' growlin'.

"'O. K.,' says Mac, 'I'll be right up. Reckon I'll bring young Baney with me.'

"A good idea, I thought. Th' lad's powerful an' quick as a cat. An' if worst comes to worst, maybe he can get a half Nelson hold on th' she-devil while we beats her brains out with an ax. During th' meantime, while Mac an' th' kid giant war burnin' up th' trail, I keeps hollerin' an' beatin' th' dishpan an' holds th' enemy at bay.

"Now, I'm tellin' you, I war tickled loco when I heard th' ol' Ford gruntin' up th' hill. Sure enough, th' boys war loaded fer bear. Their pockets war bulging with ammunition, an' my ol' shotgun loaded with slugs.

"It didn't take us long to get into battle formation, so to speak. We sat at th' mouth of th' tent awaiting th' enemy. As I have already told you, it war as black out as a stack of black cats. You couldn't begin to take aim at anythin'. But that didn't make no difference. We had lots of ammunition an' three guns, an' I didn't figure a mosquito could get by th' entrance of that tent.

"We didn't have long to wait. We heard th' old girl comin' acrost th' meadow on up th' slope toward th' tent, a mumblin' an' growlin' under her breath. Now I'm tellin' you, you can talk all you please 'bout keepin' cool an' havin' control of your nerves an' all th' rest of that poppycock, but thar wasn't a man in th' tent you couldn't hear his heart poundin'. 'It war intense,' as th' novel says. Closer an' closer she came. As luck would have it she stood in a small openin' in front of th' tent not more'n a hundred feet away. 'Let 'er have it,' says I. By th' eternal, Mister, you never heard such noise in your life. We all shot at once, an' so did I. I pulled both triggers of that ol' blunderbust at th' same time an' I believe it turned me 'round four times. But this war no time to be foolin' with trifles. Any second we expected th' furious an' wounded critter in our midst, but all war silent fer a minute or so. Then we heard her threshin' th' ground.

"'We got her! We got her! Light th' lantern! Where's your flash light?' I hollered. 'Now steady, boys, have your guns loaded an' be ready fer any emergency. Follow me.'

"Would you believe it—doggone my picture—but it's th' truth. We had shot Bill Skinner's ol' thoroughbred Jersey bull an' it cost us \$32.50 apiece."

THE OLD TREE SPEAKS

*Feet grounded in Earth's titan heart,
My head wreathed in God's sky,
I see man come, pause, and depart,
As centuries sweep by.*

—Catherine L. Barker.

How a Tree Grows

By G. H. COLLINGWOOD

IN winter the broadleaf trees stand stark against the landscape, seemingly lifeless. But when spring comes on the wings of March, there is enacted again the story of the resurrection. Life swells in the buds, and leaves and blossoms burst forth. One who has tapped a maple during February thaws or in the early spring knows that a faint pulse of life continues through the long winter sleep. Yet trees live so quietly and grow so slowly that too often we take them as a matter of course.

It is easy to understand why the mystics of bygone ages associated trees with their religion, and wove around them legends of spirits, lovely nymphs, and dryads. Trees demand air, moisture, food, and sunlight, and they are subject to disease, old age, and death. Those who have lived thoughtfully among trees concede that they have something closely akin to definite characters. They can sympathize with the

"HOW A TREE GROWS" is the first of a series of twelve articles dealing with the growing and care of trees and forests, and written to meet a widespread need for simple and practical information on tree culture. Other articles to follow are:

Tree Tips From Nature
The Planting of Trees and Forests
The Care of Young Forests
Protecting Your Trees Against Insects
Knowing and Treating Tree Diseases
The Why and When of Tree Pruning
First Aids in Tree Surgery
Shade Trees, Their Kinds and Care
Trees for the Roadside
The Making of a Town Forest
Memorial Trees and Groves

The series will be a practical course in tree care, and how to make the best use of the great variety of trees growing in the United States.—EDITOR.

African aborigines, who are reported to select a tree to live beside and to take as the intimate of their confessions. One may scoff at the possibilities of a response on the part of trees, but we realize there is much that the laboratory has not revealed concerning their life and growth.

Though the parts of a tree are intimately associated, they may be divided into the stem, or the trunk, the crown with its branches, twigs, buds, leaves, blossoms and fruit in season, and the root system. A cross section of the trunk shows numerous concentric rings, differing in width and possibly in color. Near the center is the pith,

formed during the first year of that portion of the tree's growth. Around this is the heartwood, usually clearly defined by its darker color; then the sapwood, and surrounding that the protecting bark. Between the sapwood and bark is the narrow cambium layer. The number of rings



THE LIVING TREE

In winter the branches of broadleaf trees stand stark against the landscape. It is then that we marvel at their capacity for growth and remember that spring will come and again will be enacted the story of the resurrection

usually agrees with the age of the trees at the cut. Each ring has two portions fairly easily distinguished. The part toward the center is formed early in the season and is called spring wood. Its structure is open compared with the close-knit autumn wood formed during the late growing season. Because of its greater density autumn wood may be darker than spring wood. It is less subject to shrinkage or decay. Naturally the annual rings of porous woods like oaks and ashes are more easily distinguished than those of close grained maples and birches while the resin ducts in the spring growth of pine usually help the annual rings to stand out.

The heartwood may embrace the whole center of the tree, extending within less than an inch of the bark. In some species it is not clearly defined until the trunk has attained a diameter of about a foot. Usually, however, the demarkation is clear. Superficially, heartwood is usually distinguished from sapwood by its darker color, but basically the chief distinction is in the cells. All the heartwood cells were once sapwood, but now are inactive. In some species they have become filled with resinous matter or with salts whose oxidation may account for the darker color.

To strengthen the tree structure is the chief function of the heartwood. Even after it has decayed, however, leaving the trunk hollow, the tree can continue to grow and produce fruit.

Sapwood, whose color is usually white or yellowish, consists of living cells of various shapes and functions. Many tiny tube-like vessels or pores in the sapwood carry water from the roots to all parts of the tree. Like the heartwood, the layer of sapwood varies in width, depending upon the kind of tree, its age and vigor. Young trees are all sapwood—later the center becomes heartwood. Trees with

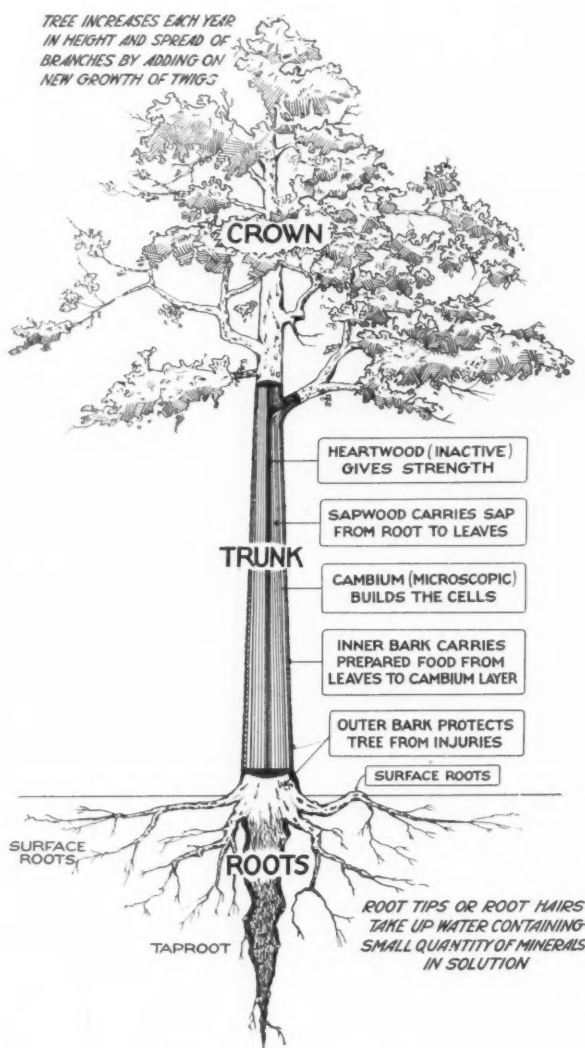
large leafy crowns have more sapwood than others, because more moisture is required.

The cambium layer is a microscopic envelope of living cells lying between the sapwood and the bark, surrounding the entire tree structure like a glove. It is the active growing

tissue of the tree, upon which life and accompanying growth depend. Like the sapwood, its cells transport water and food required by the tree, but their more important function is to divide and redivide to form wood on the one side and bark on the other. During spring and summer the cells busily knit new tissues, adding to the outer rim of sapwood and to the inner layer of the bark. Normally, they work fairly continuously until autumn when the annual ring is completed. Occasionally something may happen to temporarily suspend their activities in the midst of the growing season. The result is a false growth ring. When a tree is girdled, the flow of plant food from the leaves down through the outer sapwood and cambium is arrested at the gap and the tree usually dies. Many broadleaved trees like basswood and locust throw out sprouts from the stump or roots below the girdle, but the redwood is the only native conifer able to do this successfully.

Radiating from the central part of the stem, toward the bark, fine straight lines can be seen in the cross-section. These are medullary rays. Each line is a string of cells whose original purpose seems to

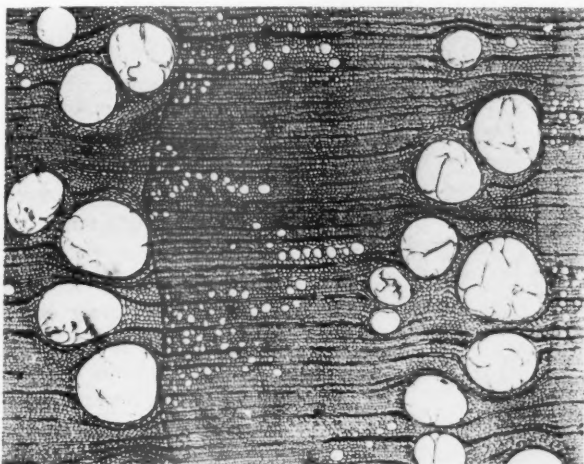
have been to store sugars, starches, or other plant foods. Each medullary ray reaches the cambium where the food reserves may be drawn upon to form new tissues and new leaves. During the early spring the tiny storehouses are almost depleted. Later in the summer as the demands upon them lessen, they are replenished gradually so that by autumn they are



HOW A TREE GROWS

The buds, root tips, and cambium layer are the growing parts of the tree. Water containing mineral solutions is absorbed by the roots, carried up through the sapwood to the leaves and is there combined with carbon from the air to make food. This food is carried by the inner bark to all growing parts of the tree

again well stocked ready for the next spring. The branches and twigs with their buds, blossoms, leaves, and fruit constitute the crown, whose shape varies according to the species. Individuals of the same species differ according to the way the buds have had opportunities to develop into leaves and twigs. An open grown tree possesses a characteristically full crown, while one which has developed in a thick stand of other trees has a smaller crown set high upon its trunk. Each bud, sprouting out from the center of the sapling or twig forms the beginning of another twig or branch. Buds are



THE STRUCTURE OF WOOD

Microscopic cross section of a tree showing the cells, the pores, through which water is carried from the roots, and the medullary rays. The distinction between the spring wood, containing the larger pores, and the denser summer wood is shown in the central annual ring

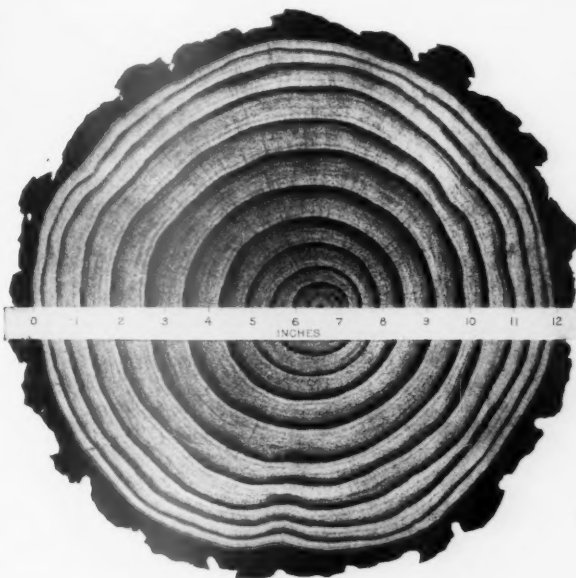
formed toward the close of the year's growth—those at the sides are spoken of as lateral buds, while those at the end are terminal. From these buds develop additional branches and twigs. The growth of any one season always remains the same length, but there follows year after year increased diameter growth which shows in the cross section as annual rings. This may be shown on many tree trunks. A wire fence nailed to a tree always remains the same height from the ground, but may be overgrown so that it will appear to go through the tree.

When the leaves drop in the autumn, the end of each branch and twig is snugly covered with scales to protect the embryo leaves and blossoms of the next year against the winter's cold. These are buds, whose scales are in reality modified leaves transformed to serve this purpose.

The leaves of broadleaf trees and the needles of evergreens have similar functions. Each may be imagined a tiny chemical laboratory, or kitchen, where sugars and starches are prepared for tree food. Even the fact that they are green is no accident, for the color comes from numberless chlorophyll bodies within the protection of the upper and lower leaf surfaces. Under the stimulus of sunlight these bits of chlorophyll combine the elements of air and water to make starch and sugars. The water is brought up from the roots, but the

air is breathed in through tiny pores usually in the under surface of the leaf. Trees breathe in a manner very similar to the way animals breathe. Air is taken in through pores or stomata, the oxygen is absorbed and carbon dioxide and water are formed. Some carbon dioxide is expelled and some is decomposed in the leaf under the influence of sunlight to be combined with water and mineral substances brought up from the roots to form sugars, starches, and other plant foods.

The leaf stems contain bundles of tiny tubes through which diluted food and water circulates. The leaf pores, through which air is absorbed, may be opened and shut to regulate the evaporation of excessive moisture. In hot, dry weather they are almost closed; in damp weather they are wide open—thus the tree is able to adjust itself to changing atmospheric conditions. Even the shedding of the leaves in winter is an economy move. When the ground is hard and the roots find it difficult to provide moisture for the tree, neither food nor moisture can be wasted. This must be prevented by checking respiration as effectively as possible. So the food conduct-



MEASURING TREE GROWTH

The number of rings usually agrees with the age of a tree. Each ring has two portions easily distinguished—the part toward the center formed early in the season and known as spring wood, and the outer part, or summer wood, formed during the late growing season

ing vessels in the stems of the leaves are sealed up and the leaves disengaged. If you will examine a twig from which a leaf has fallen, you will find a small, semicircular scar with five or seven dots in it. These are the closed ends of the pores. The scar was made before the leaf had fallen, and a layer of special, cork-like cells was constructed at the base of the leaf stalk to shield the wound. The change in the color of the leaf, from green to brown, red, or yellow, is due to the breaking up of the starch granules in the chlorophyll.

A limited amount of respiration accompanied with sap flow continues all through the winter. Pores or stomata may be

easily seen on the bark of the past season's growth of birch and cherry. A more careful search would reveal them under the thicker bark of the older growth of all trees. Evidence of winter sap flow may frequently be seen among maple trees whose broken twigs drip sap during a midwinter thaw. This helps one to understand why exposed trees may be injured or killed by strong winds or short periods of warm sunshine which accompany freezing weather. The branches give off moisture which the frozen roots are unable to restore.

Flowers come from modified buds. This is illustrated by the occasional pine cone from whose tip appear a few foliage leaves. Similar shoots sometimes occur at the apex of pears or apples. Often tree flowers have neither corolla or calyx, or the stamens and the pistils found in perfect flowers are separated in different flowers on the same tree. Pines and spruces have flowers of this type—with the pistillate blossoms near the top of the tree, and pollen-bearing staminate flowers near the ends of the lower branches. For this reason the seed-bearing cones usually grow on the higher branches. Some trees, including the holly, willow, poplar, ash and yew have only staminate blossoms on one tree and pistillate blossoms on others. In any case, the fruit cradled within the perfect flower or the pistillate form encloses the seed.

The seeds of some trees, poplar for instance and willow, retain their fertility only a few days, or even a few hours. These must find a suitable seed bed shortly after maturing. Other seeds are capable of growing after longer rest periods. As a rule, seeds that mature in the autumn do not germinate until the following spring or later. Nurserymen frequently observe the seed of white pine to remain an entire season in the seed bed and germinate during the spring of the

second season. Moreover, jack pine, lodgepole pine, and Monterey pine may retain their seed in the cone for ten years or more without losing capacity to grow.

Heat, moisture, and air are all essential to the sprouting of a seed. Moisture causes it to swell, and air at the desired temperature helps produce a ferment that dis-

solves the reserve food materials ready for use in its growth. These same three factors continue to be essential through the entire history of the tree. As the seed grows, the stem shoots up into the air and sunlight, while the roots push downward after water and minerals.

The underground structure of the tree is similar in many ways to the part above the earth. The roots branch out in every direction and have a protective covering not unlike the bark of the trunk. Root wood is as characteristic of tree species as limb wood is, though usually lighter in weight and more spongy.

After the seedling is a few weeks old the roots grow out obliquely and horizontally, producing fine thread-like tentacles called root hairs. These play an important role in feeding the tree. The larger supporting roots anchor the tree and conduct the water with minerals in solution to the main trunk. During the sapling stage, roots follow a zig-zag course, and often spread through an area greater than the corresponding space occupied by the crown. Later, as the tree becomes larger and fairly well established needing increased support, the roots thicken, and anchor it more firmly to the soil.

The root hairs absorb all the water and much of the mineral food of the tree. The little tentacles are filled with cell sap which is thicker than water. They contact closely with the moist soil particles, and absorb the less concentrated soil solution. This



ROOT STRUCTURE

The underground structure of the tree is similar to the part above the earth. The roots, branching out in every direction, have a protective cover not unlike the bark of the trunk. Root wood is lighter and more spongy than that of the trunk and limbs

is carried from the roots up through the sap-wood to the leaves where it becomes available plant food and is returned through the outer sapwood and cambium for use by the tree. Only when the sap solution is stronger than the solution in the soil can this take place. This explains why a strong soil solution, such as may result from over fertilization, is sometimes injurious to plants. Growers of trees need to remember that root hairs grow more numerous at the ends of the roots, so that fertilizers accomplish the most good when distributed well away from the trunk.

When the main root grows straight downward without branching out, it is called a taproot, and has comparatively few root hairs. This makes transplanting difficult. To overcome this nurseries attempt to develop numerous side roots or laterals. This can be accomplished by transplanting the trees every year or two until they are ready for final planting.

Over long periods of time trees adapt themselves to different soils and locations and even to different climates. They vary their structure to meet new requirements of development and growth. Trees on a windswept cliff have stronger and deeper roots than those that live in moist forest communities. The holly tree which grew originally in the South, and the slash pine which grew even farther south are each gradually adapting themselves to more rigorous climates. Each year they push a little farther toward the North. On the other hand, who knows what climatic changes have been felt by the giant redwoods and the big trees of California?

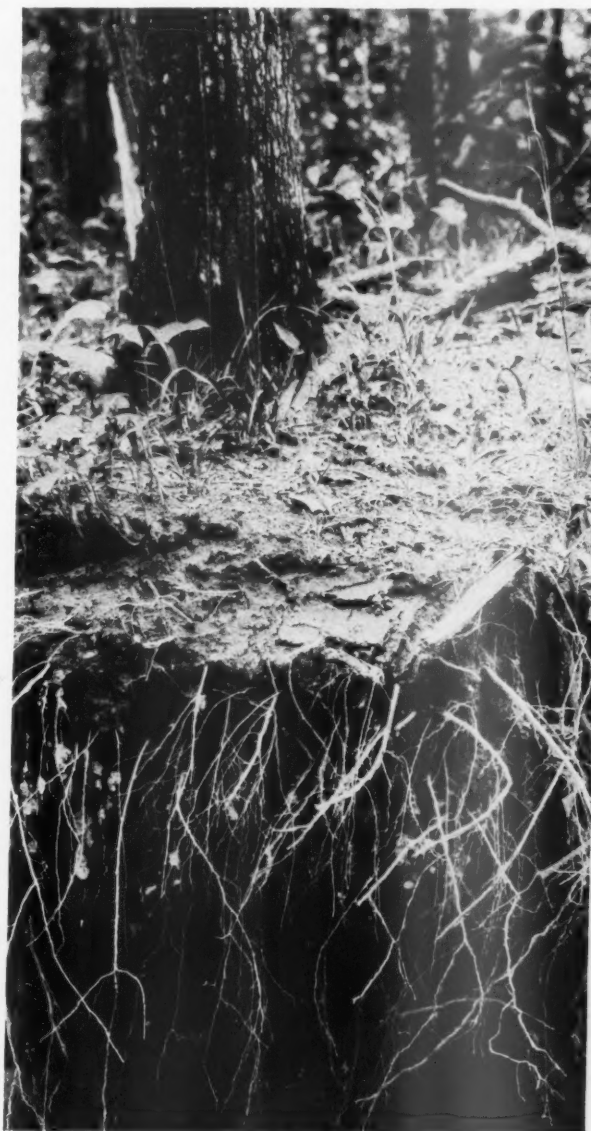
The lives of trees seem complex, but from the standpoint of every-day tree care their growth and needs are not difficult to understand. Life courses through their cells in a manner amazingly similar to the course of life in the bodies of ani-

mals. Is it any wonder that trees respond to intelligent care? Rather, the wonder is that trees continue to grow without care and in spite of the actual abuse they receive at the hands of men.

Successful growing of trees depends upon an understanding of the ways they can be expected to adjust themselves to changing conditions. To some gardeners as well as foresters this information has come with years of experience. Scientists have recorded and analyzed the results of painstaking experiments and observations. As this series appears, the titles and authors of some of the most authoritative references dealing with the various phases of tree growth and tree care will be included, as aids to those who desire to have a deeper understanding of them.

A book which is easy to read and well illustrated is J. J. Levison's "Studies of Trees," containing a series of chapters which go considerably further than this article. An authority on the structure of trees and the functions of the several parts is "Plant Physiology" by Vladimir I. Palladin. Although highly technical, it has been rendered readable for anyone acquainted with botany by the able editing of Dr. Burton E. Livingston, of Johns Hopkins University. "How a Tree Grows" by William Somerville is an authoritative book which has the advantage of being shorter and less inclusive than Palladin's "Plant Physiology." The author holds to the subject of trees, taking only a few examples from the remainder of the plant kingdom.

Two books which offer the advantages of additional observations and the reactions of other minds are "Plant Respiration" by Dr. S. Kostychev which is translated and edited by Dr. Charles J. Lyon, and "Practical Textbook of Plant Physiology" by Daniel T. MacDougal.



FEEDING THE TREE

Root hairs absorb water and mineral food for the tree. The little tentacles contact closely with the moist soil particles and absorb the less concentrated soil solutions, which are carried through the sapwood to feed the leaves



Artists of The Outdoors

Charles Livingston Bull

By Lilian M. Cromelin

Fifth of a Series of Sketches of Some of America's Most Outstanding Artists Whose Work Expresses Their Love and Understanding of the Forest and Creatures of the Wild.

THE work of this outstanding artist, illustrator, and painter needs no introduction to American lovers of the out-of-doors. But its genesis,—his decision to devote his life work to the portrayal of animals, is a little unusual. For Charles Livingston Bull was a taxidermist. In the deep study he brought to the perfection of this art—to reimbuing with the spirit of life these creatures of earth and sky who were stopped—whose nostrils would never again lift and quiver to the mysterious calling scents of the wildwood—his love and understanding of nature grew. In handling the softly closed wings of birds that would never again spread in beauty and soar into the blue, a desire was born in him to hold more permanently and to express more fully than the art of taxidermy could ever hope to do—the life that he found



Hounds of the Czar



The Leopard's Den

Original Owned by Allan Eaton, of New York

there stilled and inanimate. Not born exactly, for he loved to draw pictures of animals from the time he was a very small boy—rather reborn in mature form, strengthened by the knowledge of color, line and anatomy he had absorbed during his museum work.

When just fifteen years of age he had gone to work in Ward's Museum, in Rochester, New York, where, for helping scrape and clean the skins of animals in process of mounting, he was paid the munificent sum of three dollars a week. Years of work and scientific study at this museum perfecting his skill eventually led to his appointment as a full-fledged taxidermist in the National Museum at Washington,

D. C. From there his work as an illustrator began. World travel and constant study and observation of bird and animal life have contributed in no small measure to his success. At the home of the Bulls, at Oradell, New Jersey, there are always animals about. His distinctive work in black and white—straight magazine and book illustrating—is supplemented by his striking painting, in full color, of wild and domestic animals. Examples of this brilliant work in color are seen in the overmantels shown here, and in his painting, "The Leopard's Den," the full effect of which it is impossible to convey in this black and white reproduction.



"A Shelter in the Time of Storm"

Decoration for an Overmantel

Often the question is asked—"How does Bull get such reality, such naturalistic attitudes in the whole range of his illustrations?" The artist answers this himself when he says, "I mastered the structure of animals and birds. I knew their muscles and bones as a surgeon knows the human anatomy. If a deer scratches behind his ear with his hind foot, I know exactly what muscles will be used in the operation, therefore I can draw a deer in that position. My experience as a mounter of animals is invaluable to me. Without it I could not do my work. For ten or eleven years I studied the anatomy of animals and birds, and then I was ready to make some pic-



Contemplation

An Overmantel for the Children's Room in the Oradell Public Library

tures." Thus he removes any mystery from the basis of his very real accomplishment in art—this man who has made literally thousands of pictures of animals.

Mix in your melting pot the qualities of a skilled and sensitive artist, a student and lover of animals, a tireless worker with a photographic mind, and your composite result will be this artist who has captured, with brush and pigment, "the ferocity of the lion, the untamable, defiant majesty of the eagle, the grace of the seagull, the wild duck's mastery of space." A member of the Society of Illustrators and of the American Society of Mural Painters, Mr. Bull's most familiar work appears in magazine and book illustrating, though his murals and paintings are found in many homes of well-known people, and in leading institutions of art and learning.



The Heat of the Day

An Overmantel Painted for Cecil Smith, of Montclair, New Jersey

Chimes of the Forest

By LEONORA B. ELLIS



The Singing Tower at Mountain Lake, the gift of Edward Bok to the American people

A LITTLE Dutch lad landed in New York in 1870, with no word of our language at his command, no knowledge of our customs and ways, and no worldly advantages to make life easier in a strange country. Fifty years later, crowned with success and honor, he wrote for another generation: "The sky is the limit to the foreign-born who come to America endowed with honest endeavor, ceaseless industry, and the ability to carry it through. In any honest endeavor the way is open to the will to succeed."

In those simple, convincing words, Edward Bok, widely known publicist, author, and humanitarian of Philadelphia, paid a notable tribute to the land of his adoption. But at Mountain Lake, Florida, he has found another, and probably more eloquent way to express his gratitude to the people of the United States for rewarding his "honest endeavor" with the full measure of success. He has given to the American public a bird sanctuary and a singing tower, dedicated to art, nature, and the service of mankind.

The Mountain Lake Sanctuary and its marvelous memorial carillon stand complete, deeply significant, the product and symbol not merely of industry and art but of a lofty spiritual conception as well. Encircling the campanile, encompassing also the shores of a pellucid lake, lies the gemlike park, with its deeper coverts and bowered haunts of birds. Its dedication, February 1, 1929, drew the President of the United States and others of national repute.

When Edward Bok found himself at a point where he could afford leisure for certain finer things he had been compelled to pass by in the work-filled years behind him, he built a home for himself and family in the Florida highlands. It was a region of sapphire skies and lakes, of beautiful native growth of live oak, laurel, magnolia, palm, and pine. There were deeper woodlands interspersed pleasantly with open glades; there were dusky coverts of myrtle and spreading shrubs, woven together with blooming creepers. The air was sweetened by palm and pine; there were wilder scents from the jungle stretches; and, permeating all, was the brisk aroma from blue seas on either shore of the narrow peninsula. Audubon long ago called this region a "bird heaven," before man began to depopulate it.

But the "roseate clouds" of pink curlew and vivid flamingo described by the famous naturalist in his Florida notes of a hundred years ago, had long been gone when Mr. Bok erected his home at Lake Wales. Still, in his walks through woodland quiet and along dense lake shores, the humanitarian found the native songsters abundant. He noted also, the decided increase in the feathered population in mid-winter. Why not encourage them? Why not make the region a sanctuary for native and migrant birds alike?



The magnificent flamingo, once so plentiful in the tropical regions of Florida, but now extinct, has been restored to its native haunts at the Mountain Lake Sanctuary

Thus Mountain Lake Sanctuary evolved, and soon became the pet project of the philanthropist. The larger purpose, of course, was not merely to protect and conserve the varieties already there, or winter-homing in the region, but to domesticate many varieties from other regions and countries. Especially dear to Mr. Bok's heart is his purpose of restoring to this happy climate some of the birds now pronounced extinct throughout the length and breadth of the peninsula—the white ibis, roseate spoonbill, pink curlew, and the vividly colored flamingo.

The sanctuary has an area of forty-eight acres and entirely comprises Iron Mountain, which is 324 feet above sea level and the highest point of land in Florida. In fact, it is the highest land within sixty miles of the Atlantic Ocean and the Gulf of Mexico, between Washington, D. C., and the Rio Grande. Fourteen lakes are visible from the plateau. This height emphasizes the tradition that Iron Mountain was the ancient sacrificial ground for the Indians in Florida. Legend claims that each spring they met here to worship the Rising Sun.

Except the original pines, practically all the planting has been introduced into the sanctuary since 1923. This includes over 1,000 live oak, 8,000 azaleas, 100 Sabal palms, and 300 magnolias. More than one-half of the plants have been collected from the wilds, most of them within a radius of twenty miles of the sanctuary itself.

Understanding the dreams of Mr. Bok, one better comprehends the meaning of the nightingale retreat here in the quiet woodlands, where the golden-throated songsters from the Surrey groves are beginning their own Americanization. One understands, too, the presence of the flamingoes in the picturesque small morass near the lake. These magnificent strangers, sable and scarlet-trimmed against a snowy white, are Chilean birds, the donation of the South American republic in recognition of the outstanding purpose of the park. Previous to the coming of the South American group to the park, a fine trio of the South African variety had been imported by Mr. Bok. But they failed to prosper here. After a few months a solitary male was left, cheerful enough, and

very friendly with the wardens who bestowed much attention upon him.

This bird proved not in the least hostile in his attitude to the second flamingo contingent to arrive at Mountain Lake. This was a group of immature birds from Andros, in the Bahama Islands, and declared by ornithologists to be identically the type of those once so numerous and happy in the peninsula. However, all the Bahaman youngsters were unfortunately lost, by accidental conditions during the season of their arrival. A large consignment is expected shortly to arrive at the Sanctuary from the southern islands.

With the growth and development of this enchanting retreat, another idea seems to have evolved very gradually in the mind and heart of the man whose fine old grandmother had long ago given to her descendants that simple mandate: "Make you the world a bit better and more beautiful for your having been in it." His grandmother, with her husband, had transformed a barren island of rock and sand into one of the loveliest spots of earth—as artists have described and painted it.

Yes, there was something else Mr. Bok could do to the place he had chosen for himself and the birds. It was something that would add immeasurably to its charm, its significance, and give countless people, now and hereafter, a share in the beneficence. He would build here on the highest eminence a campanile, a singing tower, a *klokkenspel*, they would call it in his native land.

Few but know about the singing towers of the Old World—how they grew from the watchtowers of ancient days, from which the alarm would ring to call the scattered inhabitants to repair a dyke, escape from a flood, or snatch arms to repel an advancing enemy. As the more peaceful age came upon the world, the number of bells in such towers was increased, making peals, chimes, to summon to worship, rejoicing, or celebration of great anniversaries.

Slowly through the centuries more bells were added, more finely attuned, and the wondrous "music of the skies" was evolved. The carillon was recognized, as one musician has aptly described it, "as the most lasting, yet the rarest, the loudest yet the most ethereal, among artistic instruments."

Nearly every city and town of the Nether countries has long had its carillon, its singing tower, as well as its official bellmaster or carillonneur. There are approximately one hundred towers in Belgium and 115 in Holland.

America was late to have a carillon of note, but now has several, the Riverside carillon being probably the largest, as well as most expensive, until this beautiful gift of Mr. Bok's was bestowed upon his adopted country.

For a year and half the Mountain Lake tower has been climbing upward, reaching its 205 feet from granite base to pinnacled top. The completed structure is a noble achievement, suggestive not so much of "frozen music," as is sometimes said of fine architectural effects—but of music marvelously embodied in a sky-piercing shaft. The tower is built of southern materials, for Mr. Bok had in mind from the first to create in the finished plan perfect harmony. So the splendid shaft has been erected of Florida coquina

building block and the handsome pink marble of Georgia.

The bells, sixty-one in number, were cast in Loughboro, England, where they have been casting the famous bells of the world since the days of the Black Prince. Think of a craft so fine, transmitted from sire to son through hundreds of years, the secret formula of the perfect tuning, it is claimed, never being committed to writing, but handed down in the immemorial "word of mouth" way. The plainest workman at Loughboro is a true craftsman, and even today he will tell you, with the dignity of the old-time artisan who is an artist, that "our bells are always cast at midnight, yes. The composition of the metals? It is our own formula." But if you ask if the legend is true that a wedding ring is always cast into the molten mass, you are likely to get only a small quiet smile in answer.

At any rate, there were many months of work in the quaint old English town before the vast mass of musical metal crossed the Atlantic and was unloaded at Lake Wales. They were swung at last, two hundred feet above the earth, a mass of metal weighing 123,164 pounds. Well that the tower is anchored deep to its concrete and iron base.

The bells hang in rows on four levels, graduating in weight from the largest of 24,000 pounds to the smallest of twelve pounds. The bells are stationary and do not swing when played. The clappers hang from the inside of the bells, as usual, but are moved by a system of levers connected with the clavier which is played by the carillonneur in a room below the bells. The best effects of the carillon are obtained at a position of two hundred yards or more from the tower.

The marvelous carillon had its first public test with the arrival of Anton Brees, acknowledged as the master carillonneur of the world. He was born at Antwerp, Belgium, receiving his education as carillonneur under his father, Gustaaf Brees, city carillonneur of Antwerp. Mr. Brees gives daily vespers and a special recital every Sunday.

The art work on the tower is worthy of a separate study—from the great lancet windows, through which float the music of the skies, to the utmost fine detail in the carvings of the marble band encircling the tower above the majestic north door. Then that symbolic working out of life, traced through the undersea forms, through flora and fauna of the region, on up to the trees and flowers of the upper windows, climaxing in the magnificent relief, symbolizing "Man's Dominion Over All."

How do the native Floridians regard the Memorial? As something fantastic, a strange way of spending money?

No. It is their Singing Tower, their refuge of beautiful wild things, their proudest, most appreciated possession. Drive out there, stopping at an orange grove to ask a resident the best way to reach the sanctuary. "Oh, you're going to see Bok's Bells and Birds," he will say, his face smiling pleasantly. "Well, you'll like it every bit."

Which is unqualified praise, as Mr. Bok jovially declares, probably repeating one of his favorite quotations: "The truest approach to the American character is through its idealism."



EDITORIAL

Rain and Floods

A GAIN the Father of Waters and his children, awakened from their winter sleep by spring rains racing down deforested slopes, have leaped from their beds and cuffed the nation with a blow that defies the puny plans of mice and men.

It rained and there were floods. Millions of dollars were washed from the pockets of our land and the pockets of our people. Men, women and children were driven from their homes. Lives were lost. It happened in the spring of 1928. It happened in the spring of 1929. It happened in many springs before.

Yes, it rained and there were floods. Well, they were heavy rains—unusual rains. That is always the explanation but it does not stop the floods, or the loss of homes, or the funeral processions. We have always had heavy rains; we shall continue to have them. And as long as they fall on barren, deforested slopes we shall always have floods. Witness China. Witness America in recent years.

It rains. There are just two places for the water to go—into the ground or into nearby streams. Lands covered with forest vegetation hold back fallen water and divert much of it into the soil. Barren land sends it racing down the slopes to swell the streams and to make raging floods. The soil goes with it and man is powerless to say it nay.

And yet there are those who ridicule the idea that forest cover has anything to do with floods and flood control. They would stop floods after the floods occur. Even the Mississippi River Flood Commission, to which the nation has entrusted the problem of flood control, shows little or no interest in forest cover as one means of controlling floods. The conservation of water and soil apparently does not interest the Commission. Its slogan is to let the floods come and to

get rid of the soil-robbing waters as safely and rapidly as possible when they do come.

Flood control legislation passed last year contained an obscure line or two authorizing the President to ascertain through the Secretary of Agriculture the extent and manner by which the floods in the Mississippi Valley may be controlled by proper forestry practice. The President transmitted the request to the Secretary of Agriculture. The response was prompt and illuminating. It disclosed, after a survey by the Forest Service, that the character and density of forest cover on 289,000 square miles of land in the Mississippi drainage have a direct relation to run-off or soil erosion. It disclosed that the acreage of forest land of critical importance from the standpoint of water run-off and soil erosion amounts to 150,000 square miles. These facts and others, together with specific recommendations for action, were transmitted to the President and by him to the Mississippi River Flood Commission. Was this information of any interest or meaning to the Commission? Not that anyone can notice. Forestry as a factor in flood control still appears "dark" in the Commission's plans.

The Commission consists of seven members, but there is not one among them that qualifies either in experience or knowledge as a forest expert. The American Forestry Association at its recent annual meeting in Jacksonville passed a resolution urging the inclusion on the Mississippi River Flood Commission of a forest engineer to pass upon the question of forest influence on flood control. The Society of American Foresters has passed a similar resolution. Do the American people want forestry given its proper place in flood control? If they do, they will have to make their wants more forcibly known in the future than they have in the past.

Through the Trees

WHAT manner of man is Dr. Ray Lyman Wilbur, the new Secretary of the Interior? Let his own words answer. They are taken from a talk on State Parks which Dr. Wilbur made while President of Stanford University.

"We are still a pioneer nation. We have found here a

grand continent. We have done a great many things to it; we have substituted cattle for the buffalo; grain for the great prairies; orchards for the forests. At the same time in this period of exploitation, we have only just begun to realize the biological aspects of our environment. We have thought so long in set terms and ways that many of us apparently

feel that there is a certain pool of information and that unless you are baptized in that particular pool you are not educationally saved.

"What sort of education is this—when many people consider it more important to know the number and disposition of the wives of Henry VIII than the number and width of the rings of a great tree? Henry VIII had enough troubles, why bother the school children?

"It seems to me that it is more important to our civilization for our children to understand something of the races that have gone before and of their cultures than to know the number of soldiers killed at Marengo. One can get a much better idea of the history of California by studying some of the old Russian forts and Spanish missions than by reading of books. Why not let them do that and let the number of soldiers that Napoleon or the other side lost take a secondary position?

"The great problem is to have enough parks, so that we can substitute in the minds of children and in our own

minds something of trails and trees instead of cabarets and can openers. Our old educational method is full of tradition. A lot of things are unnecessary—they are academic but worthless. Great natural laboratories with good teachers are greater than all 'ologies.'

"When a man stands in a redwood forest he is bound to grow a little. It stirs old, ancestral emotions. It is worthwhile from that point of view. Children are very susceptible to that. Children live in a cell between two concrete floors, with streets to play on. More cities, more industries; poorer places for the children, more problems for the future. We are not playing fair to the children; we are losing California.

"A group of Indians who visited Stanford University recently wanted to see some of the great trees. They were taken to the redwoods. They had never seen anything like it. The comment of the Chief was: 'The Great Spirit must be very fond of this place to give it trees like that!'"

Cornstalks or Trees for Paper

VISIONS of cornfields taking the place of forests as the source of our future paper supply have been given color during recent months by frequent newspaper stories featuring the suitability of cornstalks for paper pulp. These stories have undoubtedly fixed in the minds of great numbers of lay readers the belief that, so far as paper is concerned, failure of a wood supply will easily be made good by the farmers' cornfields. To the farmer the possibility of converting his waste cornstalks into a product as universally in demand as paper naturally has strong appeal.

But before getting unduly excited over the utilization of the cornstalk crop for paper, it is well to consider some of the factors and problems which are involved. That paper products can be made from the corn plant is not a new discovery. It has been known for years that cornstalks and other fibrous plants can be easily converted into paper or fibre products of one sort or another. But to utilize crop plants on a commercially profitable scale is quite another question and the economic feasibility of such propositions is really the crux of the problem.

In the case of cornstalks, the pulp produced is short fibered and therefore limited in its use chiefly to book and writing papers—a highly competitive field even for existing pulp mills with available supplies of hardwoods upon which to draw. Furthermore, the pulp yield of cornstalks is only about 40 per cent of the dry stalks, thus calling for almost three tons of cornstalks for one ton of finished pulp. Two cords of wood will produce one ton of finished pulp and those who have investigated costs assert that three tons of cornstalks laid down at a pulp plant will cost practically as much as the present cost of two cords of wood. In addition, the producer of cornstalk paper is at a disadvantage in handling a crop plant which must be harvested within a

short period and stored over the remainder of the year, subject to decay and deterioration.

In the field of news and wrapping paper, cornstalks offer even less promise as a successful substitute for wood. It is unlikely that any chemical-processed pulp can hope to compete with ground wood and the lack of strength of cornstalk papers produced by chemical processes seems to bar them as a news sheet. In testing samples of newspapers made from cornstalks and widely heralded in the press, the Forest Products Laboratory at Madison, Wisconsin, found these sheets to contain 50 per cent and more of wood pulp. The book papers prepared from cornstalks were likewise found to contain high percentages of sulphite and other wood pulps.

As an insulating pulp, for which there is a large but very competitive market at the present time, cornstalks may prove commercially feasible. The test will come in the ability of the manufacturer of insulating paper or fiber boards from cornstalks to turn out products as good as those from wood at a lesser cost. When it is considered that the average cost of wood waste is less than that of cornstalks on a tonnage basis and that a ton of wood contains more cellulose and less water-soluble material than a ton of cornstalks, some of the difficulties facing the cornstalk manufacturer can readily be appreciated.

Despite the colorful stories in the press, there appears no recent development to warrant the complacent belief that forests of cornstalks will make forests of trees unnecessary or uneconomic as sources of our future paper supply. On the contrary, the facts serve to confirm the long stressed need of perpetuating our pulp-wood forests if the nation would have the cheapest and at the same time the best source of raw material with which to meet its astounding demand for paper and paper products.

Trees of the Bible



Along the River Jordan

Photograph by Ludwig Preiss

VI. The Sycamine and the Almond

By ADELAIDE BORAH

"THE almond shall blossom . . . because man goeth to his long home" (*Ecclesiastes 12:5*). "Because man goeth to his long home," his hair has turned white and his head is as an almond tree in white bloom upon the hillside. Rivalling the rose in beauty and perfume, the white or lightly pink flowers of the almond tree send out the sweet, clean odor of all the almonds they have in their keeping. There has never been a time within memory when almond trees did not grow in the country bordering on the Mediterranean Sea, in the main the bitter almond from which is extracted the ingredient for flavoring, and for prussic acid. Yet the sweet almond was not uncultivated. Almonds were among the gifts that Jacob sent down into Egypt by his sons to the supposed stranger ruler, the almonds of Canaan being considered of finer quality than any to be had in Egypt. *Genesis 43:11*.



An old wood cut showing the rod of Aaron blooming and bearing ripe almonds

As the Hebrew name, *shakedh*, implies, the tree blooms very early, late January or early February, and in Jeremiah is a play upon this circumstance. The prophet has said that it was an almond tree which he saw, and his Lord said, "Thou hast well seen, for I will hasten my word to perform it." *1:11-12*.

It is a matter for speculation how much further along the world has traveled since the *Book of Genesis* or of *Numbers*. In *Genesis*, Jacob performs a quaint and solemn rite with sticks of green wood from the almond tree, the plane tree, and the poplar tree. He peeled off strips of the bark to show the white parts in streaks and set them in the gutters of the watering troughs when the flocks came to drink so that those that drank conceived and brought forth ringstraked, speckled and spotted (*30:37-43*). In the other, twelve rods were placed in the tent of meeting overnight,

on the promise that the Lord would choose the man whose rod he would cause to bud, and each rod had the name of the head of one of the twelve tribes written upon it. The next day, Moses went into the tent of the testimony and found that "the rod of Aaron for the house of Levi was budded, and put forth buds, and bloomed blossoms, and bare ripe almonds." The sacred candlestick of the tabernacle

was a physician, a man learned beyond many men of his time, and not given to confusion of terms. He refers to the sycamore tree later on. Moreover, it cannot be said that the sycamore is exceptional for either its strength or its deep roots, the contrary being true. One such tree grew in the salt yard of a log cabin clearing in southern Illinois in 1850, the young tree having been brought from Ohio on



Photograph by Ludwig Preiss

Site of ancient Jericho where balsams were said by the historian Josephus to have grown

"of one beaten work of pure gold" had each branch formed like the almond flower (*Exodus 25:33-37*).

When the allusion in the Bible is made to other nuts than the almond, the walnut, the hazelnut and the pistachio nut are meant. *Eghoz* was the old Hebrew designation for the walnut, but has come to mean all nuts, or nuts in general. This word occurs only once, in the *Song 6:11*, although Josephus saw many walnut trees in Galilee north of the Lake. Indeed Galilee abounded in thickly wooded places, and Luz, the old name for Bethel (*Genesis 35:8*) was the Hebrew word for hazelnut, while in the Persian *luz*, or *guz*, was the word for the walnut. The pistacia tree, so called from the Persian *pista*, was especially numerous east of the Jordan around Damascus. It grew plentifully throughout Palestine in dry climates, on the hillsides and in rocky places, thriving when once well rooted wherever the olive tree grew. *Botnim*, the Hebrew word for the pistachio nut, may have given the name to Betonim, a town on the border line of that portion of the land allotted by Moses to the children of Gad (*Joshua 13:26*).

The sycamine tree, *tut shami*, in the parable used by *Luke 17:6*, is believed by the authorized sources of information to be the Damascus mulberry tree, *Morus nigra*, the fruit of which is so popular in Eastern market places, and which is much like our loganberry of the Pacific northwest.

The suggestion is also made by someone that the word sycamine is a corruption of the word sycamore. Yet, Luke

a flatboat. This tree grew to a diameter of eighteen inches, with large, almost vertical branches beginning about eight feet up, forming a cone shape and reaching up twenty-five or thirty feet. Its large, dark green leaves, in shape like the white mulberry, were dull and tough. The long, black berries were plumped with juice.

The mulberry trees "with the sound of a going in the tops" (*2 Samuel 5:23-24*) are thought to have been quivering aspens or poplars, neither the Persian mulberry nor the white silkworm variety having been introduced into Palestine until the time of the New Testament. The white mulberry tree does not seem to thrive so well, however, and those interested in the silkworm industry in Palestine have been experimenting with the castor oil plant, *ricinus*.

The presence of balsams in Palestine is accredited to the Queen of Sheba, who brought to Solomon spices of great store: "and there came no more such abundance of spices as these which the Queen of Sheba gave to king Solomon" (*1 Kings 10:10*). Josephus, the Jewish historian of the first century, speaks of seeing them at En-gedi and at Jericho. It is plausible. The Queen's caravan passed the oasis, and doubtless rested there, for she was a leisurely visitor, and since she had such store of spices, left tokens of her stay behind her as the Romanys scattered flower seeds to spring up for the next comers. More proof would seem present in a valley close on the southwest side of Jerusalem, the valley of Rephaim (*2 Samuel 5:22*), or, the valley of Baca, "of weeping" (*Psalms 84:6*), a side-note giving "or

balsams." The Queen of Sheba sojourned in Jerusalem considerable time. It is even thought that Solomon married her. At least, we know that balsams grew in the valley of Baca, whether planted by a king or his queen.

But, travelers there were who came and went over the caravan routes before the time of Solomon. It was when Joseph's brothers had taken from him his coat of many colors and cast him into the pit, and had sat down to eat bread: that "they lifted up their eyes and looked, and, behold, a company of Ishmaelites came from Gilead with their camels bearing spicery and balm and myrrh, going to carry it down to Egypt." (*Genesis 37:25; 43:11*). In these passages spicery is translated from *basam* (*besom, bosem*).

The balm of the trees that grew in Gilead was extracted in several ways, from various parts of the tree, the resinous sap, opobalsamum, being thought the most efficacious. This exudes like juice upon any incision made in the bark with a sharp stone. The juice from the fruit yields carpobalsamum, the kernel opobalsamum, and the twigs when steeped zylobalsamum. Jeremiah, referring to its potency, asks, "Is there no balm in Gilead? Is there no physician there? Why then is not the health of the daughter of my people

sea he sailed to reach the fabled Ophir, the Phœnician sailor knew when he saw the great red logs piled on the shore that they were *valguka*, his word for *valgua*, which was the almug or algum tree of the Scriptures, and which Dr. Royle believes to have been the white sandalwood from the mountains of the Malabar Coast; but it has been generally accepted as the *Pterocarpus santalinus*, of the family *Leguminosæ*—red sandalwood, which with gold made the cargo of the ships returning to Ezion-geber (*1 Kings 9:28*).

Accustomed to think in terms of small bits of such wood, wrought into fan or box, it is difficult to let slip the bands of our imagination to the height of those great timbers, glowing like precious stones, which flanked the long approach to the house of the Lord, and the king's house—polished to the smoothness of the olive berry, and reflecting within their depths the sky, the passing cloud, the captive or the king, each true in form and native hue, and, always ascending to heaven, their incense fresh as morning upon the almond flower. When Solomon first saw them as they were brought from the ships he commanded that all the harps and psalteries for his sweet singers in Zion be made of this wood, instead of from fir wood, as heretofore (*1 Kings*



From water-color by John Fulleylove

Josephus saw many walnut trees near Lake Galilee—indeed, Galilee abounded in "thickly wooded places"

recovered?" (*18:2*.) It was a charm against plague and fire and any ill to which the flesh fell heir.

One more fragrance is to be added to the bouquet of sweet-smelling trees of the Bible. In storied India it grew—or was it Persia, or Arabia, or even Africa? On whichever

10:11), for "there were none such seen before in the land of Judah" (*2 Chronicles 9:11*).

The "hill of frankincense" of Solomon's Song (*4:6*) may have been that part of a formal garden plan in the palace where tropical plants were cultivated.

Fires and Forest Growth

(Continued from page 276)

the trees are so weakened that they fall easy prey to the wind, insects, or disease.

Studies of fire-scarring in virgin pine forests have been made by the Southern Station in Arkansas, Texas, Louisiana, and Mississippi. The results of accurate tallies on a number of separate areas showed that on the average one out of every four longleaf and one out of every nine shortleaf pine trees in the virgin forests bear visible fire scars. The connection between woods fires and this damage to virgin timber is rarely recognized by lumbermen, although fire scars have a decided effect on the quality and quantity of lumber sawed from such logs. Fire-scarred butt cuts are often bucked off and left in the woods; this is especially true of hardwoods. The fact that the portion of the tree affected by fire scars normally produces the finest grades of clear lumber materially adds to losses when this section of the tree is injured.

In connection with a mill scale study in virgin shortleaf pine in Arkansas, the Forest Products Laboratory found that fire damaged logs yielded only eighty-five per cent as much lumber as sound logs and were worth \$10.20 less per thousand board feet gross log scale.

There are numerous evidences that fire has a detrimental effect on the growth of forest trees. Its effect on height growth of longleaf pine has already been commented upon.

Another example of the effect of repeated fires on tree growth is afforded by a farmer's loblolly pine woodlot in southeastern North Carolina. In order to protect his woodlot from fires sweeping in from the outside this farmer has made a fire line entirely around the woodlot. This fire line covers a strip of ground nearly 100 feet wide from which the grass has been burned off every year during the winter months for the last twenty years at least. There is a scattering stand of loblolly pine on the fire line of the same age as the protected stand. The fire line, however, is entirely devoid of seedlings, saplings, and brush which form a dense thicket over the entire protected woodlot. A comparison was made between the growth and stand of trees on the fire line with that inside the woodlot. The dominant trees average forty years old on both areas but those trees subjected to annual fires average nine feet shorter in height than those on the protected area. The trees on both areas range from four to sixteen inches in diameter but there are 158 per acre on the protected woodlot compared to sixty-two per acre on the fire line. Likewise, the total volume on the protected side averages 1793 cubic feet per acre compared with 664 cubic feet per acre on the fire line, or nearly three times as much wood produced where fires have been kept out.

Three hundred and twenty acres of typical cut-over longleaf pine land in southern Mississippi was fenced in 1923. One half of this area has been burned over every year since that time, the fires being set during the winter months, corresponding to conditions ordinarily found in the adjacent country. With the exception of two reserved check plots of ten acres each, the remaining 300 acres has been grazed

by cattle at the rate of one steer to ten acres, between March and November each year.

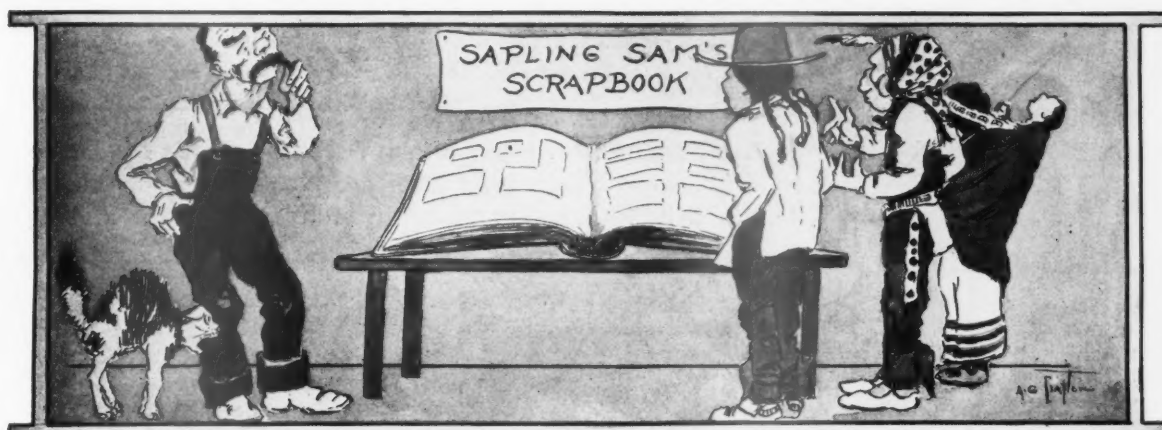
Sample plots were staked out throughout this 320-acre area and periodic examinations have been made to determine the effects of fire and grazing on the longleaf pine seedlings which became established from the heavy seed crop of 1924.

The data obtained from these examinations has not been completely analyzed. Preliminary conclusions, however, showed that eighty-five per cent of the pine seedlings survived when given complete protection from fire and grazing, whereas but seventy-five per cent came through on areas that were grazed but not burned. The loss on the burned areas was much greater. With grazing fifty-six per cent of the seedlings survived; without grazing only eighteen per cent came through. This indicates that grazing has done little harm where fires have been eliminated and has greatly increased the chances of seedling establishment where fires have occurred annually. One clear-cut conclusion to be drawn from this experiment is the serious damage which annual fires cause in the natural reproduction of longleaf pine.

The use of fire as a protective measure in turpentine orchards is common practice throughout this region. As an insurance against accidental fires, areas to be worked for turpentine are normally burned over every winter just before turpentine operations begin. There is little doubt but that these fires influence the yield of gum obtained.

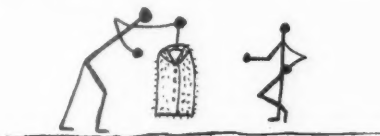
Dr. Eloise Gerry and Dr. Austin Cary in cooperation with the Southern Railway Company in South Carolina carried on such a test on a small scale, in 1927, using trees averaging nine inches in diameter. The yields of gum were obtained from two comparable groups, one of which was burned and the other not. The yield calculated in barrels of spirits per crop—10,000 faces—indicated that the unburned trees produced at the rate of about eighteen barrels per season as compared with a yield of twenty-nine and one-half barrels from the trees protected from fire. This represented a monetary loss of \$287.50 per crop, with turpentine averaging \$25 a barrel; this does not include the loss in resin which is even greater than the loss on the turpentine.

These illustrations point toward the damage suffered each year from the widespread occurrence of fire in the South. The growth of trees and yield of forest products are also seriously affected to the point where forest management is impracticable without fire protection. When the people realize that fires lower the values of taxable property thereby increasing the tax burden elsewhere, it is to be hoped that adequate steps will be taken to hasten the day towards more complete protection. Rapid advance has already been made through state forestry departments, the United States Forest Service and forward-looking timberland owners in giving fire protection to limited areas, but in 1927 these comprise only thirty per cent of the area needing protection. Without complete protection from fire, millions of acres of forest land in the South can never attain the full productive capacity necessary to the best economic development of the region.



Everything but Lame Ducks

President Coolidge signs a bill creating national sanctuaries for all kinds of wild birds, including clay pigeons—says George Rothwell Brown in the *Washington Post*.



"Contented Cows," Etc.

Customer: "Are you sure this coonskin coat will be warm?"
Salesman: "Yes, sir. The fur in this coat came from coons that died of suffocation."—*Carolina Buccaneer*.

Not Guaranteed

Nurse—"Bobby! What would your father say if he saw you'd broken that branch off?"

Bobby—"He'd say trees are not so well made now as they were before the war."—*Punch*.

And It Runs in the Spring

With the Hoover Administration under way the air is full of rumors of what will be done or won't. *The Fertilizer Review* tells of one "rather vicious story that the Forest Service will be transferred to the Prohibition Enforcement Division so there will be more sap."

Excerpts from the Lookoutman's Diary

- 1 P. M. Sky clear. Smoky haze. All's well.
- 5 P. M. Sky clear. Very smoky from fires all around. All's well.
- 8 P. M. Caught a civet cat in my pack-rat trap under the house. All's not well.—*Note from Sequoia National Forest*.

Which?

Traffic Cop: "Let me see your license."
Tourist: "Marriage, car, driver's, camp-fire, fishing, or hunting? Open the license trunk, Maria."—*The Smoke Screen*.

Anyway They're Not Cuckoo

In a recent number of *AMERICAN FORESTS* and *FOREST LIFE* an advertisement appears for birds' winter food and among other tempting delicacies is "Chickadee Highball." We always did think that chickadees were tipsy acting and now we know the reason.—*Carson Pine Cone*.

New Risk in Forestry

Some time ago Charles R. Meek, Chief of the Bureau of Extension, arranged with Extension Forester Thomas W. Skuce of West Virginia to supply the Department with several bushels of wild black cherries for planting in the State Forest nurseries this

fall. The cherries were not received and Meek wrote to Extension Forester Skuce asking when they could be expected. He reports that he asked two young men who lived near Richwood to secure the cherries, and while gathering them they lived in a camp on the Williams River above Richwood. They labored patiently and secured the required amount. While in camp they were debating how to get the cherries to Richwood, and finally decided that the best thing to do would be to convert them into wine for the holiday season. As a result of this advanced method of utilization, the planting of wild black cherries in the Pennsylvania forest tree nurseries this fall will be postponed until a future date.—*Pennsylvania Forest News Letter*.

Exchange Day

"I've just written the Department of Agriculture," 'lows Ranger Bill in the *California District News Letter*, "offerin' to swap their new bulletin on horse-shoeing for one on auto-repairin'."

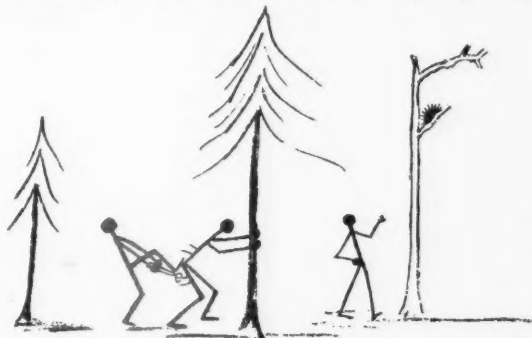
Pickled

Recently a flat headed borer was found in a redwood tree where it had attacked a fire scar, been imbedded in the pitch and then covered by 1200 years of ring growth. The same species is found attacking redwood today.—*F. P. Keen, in Bark Beetle Manual*.

First Aid

Patrolman Pittman's diary, 11-28-28:

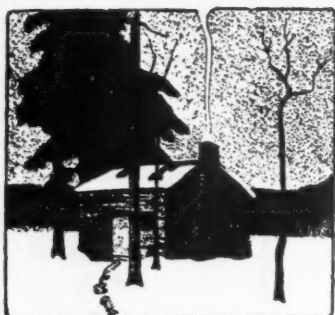
"Patrolman Kjera had a rather peculiar experience today, by having a free-for-all battle with an overgrown porcupine some 80



feet up in a white pine. Among remarks heard during the fight was, 'Porky, don't you shake your tail in my face'—then things happened.

E. M. Bright's diary, 11-28-28:

"Stopped cutting brush at 11 A. M. Walked to cabin and had dinner ready at 12 noon. Pittman and Kjera came in 15 minutes late. Pittman and self picked porky quills out of Kjera so he could sit down to eat, as we have no standing-up table."



Department of Science Education

Conducted by ELLIS C. PERSING

Natural Science Department, School of Education, Western Reserve University

How Teachers May Use Current Articles in This Magazine to Supplement Nature and Science-Study Textbooks Will Be Outlined in This Column Each Month by Professor Persing

THE suggestions for using the articles in this magazine will be given in a form that can be used directly by students and teachers in the upper elementary grades, the Junior High School and Senior High School.

Textbooks and courses of study serve as outlines for the science work in grades one to twelve inclusive. These outlines of essentials are necessary and it is not our plan to displace textbooks in any field of subject matter but merely to suggest a wealth of supplementary reading and visual materials which will enrich the present course and relate it to the experiences of the pupils. We are certain that the materials found in *AMERICAN FORESTS AND FOREST LIFE* from month to month will help acquaint pupils and teachers with the world about us and help them to keep up to date on topics of our forests and wild life.

Out Door Calendar

Have the pupils make a list of the tree flowers that they see in bloom during May. Opposite the name of the tree bearing the flowers write the time and place they were observed. At the end of the month place the tree flower calendars of all the pupils in your room on the bulletin board. From all the lists copy on the blackboard the names of the tree flowers seen by all the children. The Articles in *AMERICAN FORESTS AND FOREST LIFE* will suggest other things for you to observe in the out-of-doors.

The American Forestry Association has prepared a blank on which these lists may be kept. If you can use one or more of them they will be sent upon request.

Elementary School

Garden Flowers—"A Garden in the Forest," by Anderson McCully, page 265, this issue.

Perhaps you are not familiar with a garden in the forest. You should not fail to read this story of how to make use of plants in a flower garden.

1. Discuss the plants for a forest garden.
2. Tell in what way these plants are like the wild plants.
3. How can we obtain the plants for the forest garden?

Birds—"Forest People," by Ben East, page 269, this issue.

Do you like stories of adventure? Here is an article giving the adventures of a man with a camera. You will want to know how he has taken pictures of wild life.

Can you answer these questions?

1. Why are the pictures of loons rare?
2. How did Walter Hastings find a loon's nest?
3. How did he become known as a bird photographer?
4. What are some thrills he has experienced?
5. What has been his motto?
6. How does he protect the birds?

Junior High School

Trees—"Tree Myths of the Cherokees," by Robert Lindsay Mason, page 259, this issue.

Do you like to read stories about Indians? Here is an article that tells what the Indians believed about trees.

1. How would they use lightning-struck trees?
2. What tree was used to help catch fish?
3. Which myth do you like best? Why?

Trees—"How a Tree Grows," by G. H. Collingwood, page 279, this issue.

This is the first of a series of articles about trees designed to help you realize how very much alive they are.

1. Why does a tree usually die when it is girdled?
2. Explain why a hollow tree can continue to live.
3. Are all mature trees able to produce seed?
4. Name two functions of the roots.
5. Why are the leaves green?

"Ancient Box Trees of England," by H. H. Warner, page 263, this issue. Have you seen a box tree? Here is the story of the most interesting tree in England. Interesting facts about the early uses of it by the Romans are given. The illustrations show its use as edging for flower gardens and decorations.

Senior High School

Forestry—"Fires and Forest Growth," by E. L. Demmon, page 273, this issue.

Of all the enemies of the forest, fire is the worst and often the most needless. This article tells something of the price the people of the South pay for their carelessness with fires in the forest.

1. When do fires do greatest harm to the forest?
2. Why is the damage most severe in a comparatively young forest?
3. Describe the ways fire injures the larger, more mature timber.
4. Is it true that annual burning makes better grazing conditions?
5. What is the effect of fire upon the turpentine industry?

Trees—"Trees of the Bible," by Adelaide Borah, page 293, this issue.

This is the sixth article of the series that deals with trees of the Bible.

1. What were the early uses made of the almond tree?
2. Discuss other nut trees.
3. What use was made of the balsams?
4. Discuss the mulberry tree.

Birds—"Chimes of the Forest," by Leonora B. Ellis, page 288, this issue.

While studying birds you should be sure to read this story of how Edward Bok evolved the Mountain Lake Sanctuary.

Discuss the need of bird protection.

Compare bird life of the southern states with that of the northern states.

Read the whole article and be prepared to give a report before your class.



The Press and Forestry Education

Association's Forestry Educational Work Receives Widespread Recognition from Southern Press

SINCE the inauguration of The American Forestry Association's Southern Forestry Educational Project in Florida, Georgia and Mississippi, late in 1928, the press of the South has given the work widespread recognition. Daily and weekly newspapers, as well as many monthly publications, have endorsed the purposes of the campaign and through the medium of the printed page are working hand in hand with the Association and cooperating State agencies to discourage the practice of woods burning and spread the doctrine of forest preservation.

While lack of space makes it impossible to quote from the hundreds of southern newspapers that have enthusiastically endorsed the project, the following excerpts are typical of the editorial attitude of the entire South, and are published in recognition of the editorial war that is being waged, on the heels of the Southern Forestry Educational Project, for the restoration and protection of the piney woods.

"It is indeed fortunate," says the Columbus, Georgia, *Enquirer-Sun*, "that demonstrations such as The American Forestry Association and State agencies have under way in our community have at last been set going. They should appeal to the young people who hear them and to all who are immediately interested in the value from every standpoint of healthy, abundant, and well-conserved timber lands. The *Enquirer-Sun* is heartily interested in every sensible measure taken to conserve and develop reforestation. Especially it is interested in bringing entertaining demonstrations to young people of the need of conservation measures. Our congratulations are offered to the Association and State agencies."

The Jackson, Mississippi, *Clarion-Ledger* states editori-

ally: "The American Forestry Association is starting a big campaign to educate the people in general matters of forest growth and conservation, especially the prevention of forest fires. It would be a blessing if timberland owners everywhere could learn this lesson."

From the Spartanburg, South Carolina, *Herald* this excerpt was selected: "The long traditional habit of 'burning off' new grounds and using fire generally to clean debris off of land has undoubtedly been a wasteful and costly business. It is high time that Southern land owners should learn how to conserve timber at every turn. Scientific knowledge and practical methods are needed throughout the South."

"Today," declares the Brunswick, Georgia, *News*, "reforestation is as important to Georgia as any subject before the people, and the motion pictures and lectures being delivered throughout the State are only part of the program to restore the State to its rightful rank in the nation's storehouses of growing timber."

The *Florida Times-Union*, published at Jacksonville, comments: "For many years past main efforts have been in the direction of destroying the forests, in the sense that they have been used commercially and no thought given to the matter of providing new forests. In recent years, however, the people have been learning. They are more eager to learn now than heretofore regarding forestry matters. Already there is evidence of accomplishment of the right sort and character. As this work is carried forward, energetically, unselfishly and practically, so will be the benefit of Florida."

"It is a big piece of constructive news," says the Savannah, Georgia, *News*, "that the forestry educational work of The American Forestry Association is to begin in Georgia."

Tree Myths of the Cherokees

(Continued from page 262)

spoons, combs, and other household articles as today it is used for souvenirs but never as fuel because it was sacred as medicine. In his conjurations the medicine man would never allow so much as a leaf of either shrub to get into the fire as it would immediately bring on an interval of very cold weather, the supposition being that the leaves when burned gave out a hissing, crunching noise like snow and sleet. The wood and leaves of the summer grape—*vitis aestivalis*—called *telun'lati* by the Cherokee, would also produce the sudden undesirable weather change.

Sassafras, another sacred medicine, was also taboo as fuel. This may have been a wise dispensation for the wood had a very bad fashion of popping about and setting fire to the lodge and cabins. In medicine the herb doctor sprayed an infusion over the patient's head and body from his mouth bringing about a cure for various diseases; among these was an infliction common to baby redskins which was produced by a bird's shadow inadvertently falling upon a child while it was playing out of doors! As birds were the origin of all diseases and supposed to bring plagues and epidemics of a serious nature any suspicious action upon their part was always regarded as an omen of ill-luck.

The most interesting and poetic legend of Cherokee myths explains the beautiful color of the cedar. The greatest of all medicine trees, it was used in many ceremonies, especially that of the war dance when scalps were hung upon its boughs or upon small hoops of cedar elaborately decorated for the great occasion, while warriors great and small trooped about in frenzied dance pantomiming their exploits to the fond delight of an ecstatic audience, to war drums and wild furore of paint and feathers.

As goes the legend, a terrible giant with plucked foretop and long braids of hair pendant from his temples lived on *Tsunegun'yi*, Tennessee Bald, in North Carolina, at the cor-

ner junctions of Haywood, Jackson, and Transylvania counties. This giant was the impersonation of the Cherokee Devil and one of his malevolent tricks was to interfere with the daily course of the sun. His footprints were discovered on Cany fork, ten miles above Webster, North Carolina, in Jackson county, at a place called Jutaculla Rock where there were some rude carvings. In reality these were not carvings, the shaman said, but were scratches from the armored moccasins of the giant when he jumped from this cliff to the valley below where he had a farm! On top of *Tsunegun'yi* was a steep laurel and balsam-rimmed tract of vast proportions which the giant used for his bed. If brush and sticks were piled here in the daytime, by next morning it would be swept clean as if by a feather.

When this slant-eyed monster began to interfere with the daily course of *Une'lanun'hi*—"the measurer"—or sun, two brave Cherokee warriors undertook to rid the seven tribes of diabolical mischief because the crops and the health of the people were being ruined. The two stole to Slant-eye's bed on *Tsunegun'yi* at night and slew him as he slept. But the head would not die. They brought it back still alive to the Indian village amid great astonishment and rejoicing and tied it to the top of a tall tree; in the morning the head had wiggled loose and dropped to the ground. The same thing happened to other trees on successive nights until at last the two warriors speared the massive head upon the sharp point of a tall cedar where it stayed. But the blood trickling down dyed the wood of the cedar to a deep red and so it has been ever since.

That is the reason that the *anisi'na*, or malevolent ghosts, that cause ugly dreams cannot endure the smell of cedar and he who sleeps with a piece of it under his head or burns a bit of green twigs upon his fire will sleep peacefully without dreaming and will awake much refreshed the next morning.

Working Camera Miracles With Birds

(Continued from page 270)

that would have weighed three-quarters of a ton, in the dark at that, and he has even had a rattlesnake for a neighbor on one occasion in the cramped quarters of his blind. Always, however, he has had one motto: "Get the picture!" And that is the reason for the reputation he bears today of doing the impossible in bird photography.

Despite the common belief that an intruder approaches an eagle's aerie only on peril of his life, Hastings has climbed repeatedly to the nest of the king of birds and made pictures by the hundreds of feet, of eagles old and young. He has come away unscathed, too. That is one of the other remarkable things about this tall, quiet woodsman. The birds seem to understand and trust him as well as he understands them.

In all his work he has been guided by the principle that to retain this trust he must merit it. He expects the feathered clan to repose its faith in him only as long as he does not betray the confidence. Once an ardent hunter, he has laid away his gun save on rare occasions for collecting purposes,

and today he engages in no sport more ruthless than dry fly fishing for trout, of which he is an ardent disciple.

All his camera work is done with the greatest care never to disturb a bird at her nesting. He will bend brush aside from a nest, if necessary, but he will not break it down. He leaves no trail to the nest to be followed later by fox or mink or other prowler, and when he leaves the vicinity everything is exactly as he found it.

Here is an example of the results he obtains from this considerate treatment of his feathered friends. During a winter ice storm in 1925, when ice had coated weed heads and all other food and quail were starving by thousands, Hastings established feeding stations throughout his section. He expressed a desire to be photographed with one of the wild coveys feeding from his hand. Oldtime gunners said the birds would starve first. Some of them laid wagers on it, but they lost. Before the week was over the quail came in and Hastings had the picture.

Fleet of International Trucks Wins Battle with Terrific Hurricane

American Forestry Project Men push through cloudbust, mud, and flood with five sturdy Internationals and present "Stop Woods Fires" campaign at Fair on schedule



This view shows the fleet of 5 International trucks working on a 3-year demonstration program for the Southern Forestry Educational Project

DRIVING through one of the most disastrous tropical typhoons in the history of Georgia, with a fleet of five International Trucks, the Southern Project of the American Forestry Association recently inaugurated its educational campaign to "Stop the Woods Fires" that wreak havoc annually in the timberlands of the South.

The educational campaign, now well under way, aims to bring about a changed attitude by means of demonstrations, moving pictures, lectures, and exhibits, and the five International Trucks used to transport the necessary projectors, literature, and men are the nucleus around which all activities center.

Assembled at Atlanta, the trucks were dispatched to Macon where

they were greeted by the Chamber of Commerce. During the reception the storm broke and the trucks began their spectacular trip to Waycross where they were scheduled to open the National Forestry Fair the following day.

Late in the afternoon of the day of the Fair Southern Georgia came out to see the damage the storm had wrought. At Waycross, the foresters previously gathered to arrange the Fair gazed mournfully at the devastation around there. And as they did so

five mud-spattered Internationals roared in from the West after a thrilling home stretch run, an encouraging tribute to the stamina of

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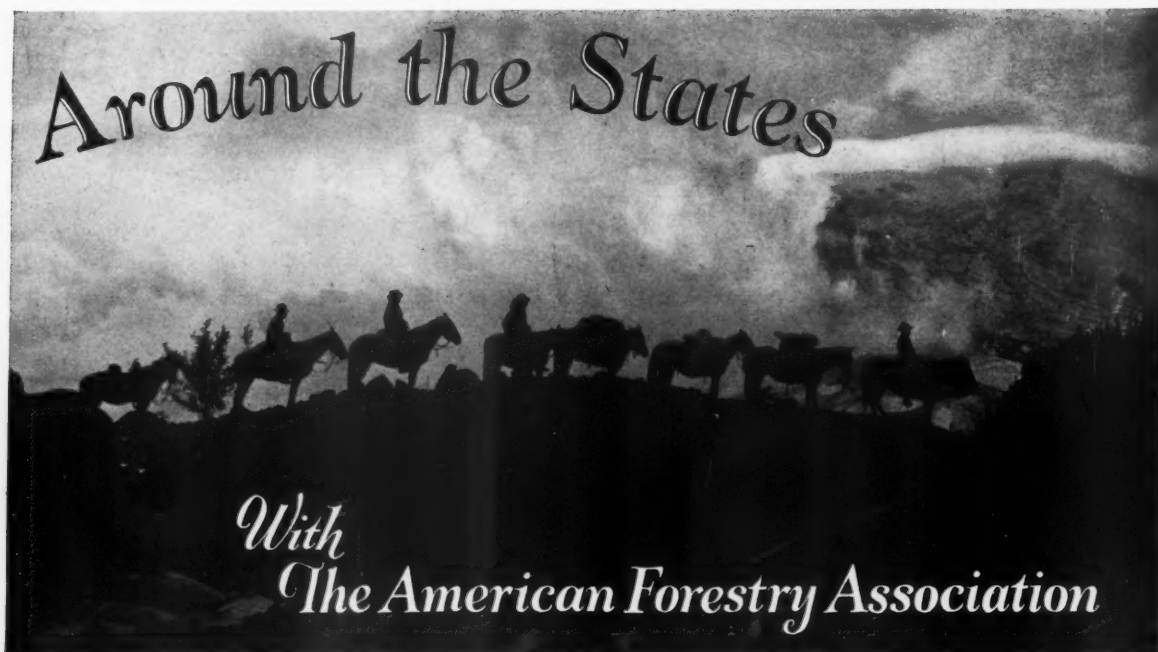
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Forest Service Names Fred W. Morrell Public Relations Chief

Fred W. Morrell, for the past nine years District Forester of the Northern National Forest District, at Missoula, Montana, has been appointed Chief of the Branch of Public Relations, United States Forest Service. He succeeds the late James G. Peters, who died last October. Mr. Morrell will have charge of the work of State cooperation and of the informational activities of the Forest Service.

The Forest Service also announced the appointments of Evan W. Kelley as District Forester at Missoula, to succeed Mr. Morrell, and of Joseph C. Kircher as District Forester in charge of the Eastern District, to succeed Mr. Kelley.

Mr. Morrell entered the Forest Service in 1906 as an inspector in timber reconnaissance and management. He served as assistant District Forester in the Rock Mountain District, at Denver, Colorado, for twelve years, and became District Forester at Missoula in 1920. Mr. Kelley also entered the Forest Service in 1906 as a forest ranger in California. In 1910 he was appointed Supervisor of the Eldorado National Forest, and later was assigned to administrative work at San Francisco. In 1925 he became District Forester of the Eastern National Forest District. Mr. Kircher has been with the Forest Service since 1909, entering as a technical field assistant.

Edward H. Forbush Dies

Edward Howe Forbush, one of America's most distinguished ornithologists and authors, died at Westboro, Massachusetts, March 7. He was seventy years old, and

less than a year ago retired as Director of the Division of Ornithology of the Commonwealth of Massachusetts, his native state.

In addition to many articles on birds and bird protection, Mr. Forbush's principal works are "Two Years With the Birds on a Farm," "Useful Birds and Their Protection," "A History of the Game Birds, Wild-Fowl and Shore-Birds," and his monumental work in three volumes, "Birds of Massachusetts and Other New England States."

He was a Fellow of the American Ornithologists' Union and a member of its Council, and for many years he served the National Association of Audubon Societies as Field Agent for New England.

Three Hundred Square Miles Added to National Parks

Nearly three hundred square miles were added to the National Park system during 1928 through additions to existing parks and the creation of new ones, says a statement issued by the Department of the Interior, bringing the total area up to 12,113.5 square miles.

The largest single addition was the Grand Teton National Park in Wyoming, established after a thirty-one year struggle for Congressional sanction. President Coolidge signed the act establishing it on February 26, the birthday of that famous hunter, scout and Indian fighter, Colonel William F. Cody.

Covering an area of approximately one hundred fifty square miles, the new park includes the magnificent Teton Mountains, a granite uplift carved by glaciers long ago. Even today many glaciers still hang in the cirques and gorges, and the peak of the Grand Teton constitutes a challenge to

mountain climbers who did not conquer it until 1898. On the west the park borders the Jackson Hole country, which in the early days of the West was a hiding place for cattle thieves and other criminals.

Yellowstone Park was increased during the year by the addition of seventy-eight square miles; Lassen Volcanic Park, in Southern California, by thirty-nine square miles, and three square miles were added to Acadia National Park on the Coast of Maine. Bryce Canyon National Park in Southern Utah, established in September, covers an additional twenty-two square miles.

Society Appoints Committee on Forest Policy

The Society of American Foresters, following out a program adopted at New York in December, has announced the appointment of a committee to consider the problems presented in maintaining the productivity of forest lands in the United States, and to devise and recommend for consideration and action policies adequate to meet the problems.

The following have been named to serve on the committee by President Paul G. Redington: Barrington Moore, Chairman; Major George P. Ahern, Clarence L. Forsling, Ovid M. Butler, F. C. Craighead, Captain I. F. Eldridge, Henry Solan Graves, Colonel William B. Greeley, William L. Hall, R. C. Hall, J. S. Holmes, J. P. Kinney, Aldo Leopold, P. S. Lovejoy, D. T. Mason, E. P. Meinecke, F. H. Newell, Axel H. Oxholm, Charles Lathrop Pack, Gifford Pinchot, Don P. Johnston, J. F. Preston, Franklin Reed, Ward Shepard, F. A. Silcox and Hugo Winkenwerder.

Suggest Conference to Conserve Natural Resources of World

An international conference to provide for an inventory of the natural resources of the world and to discuss means of preventing waste and restoring depleted resources was proposed to President Hoover late in March in an open letter signed by Gifford Pinchot, former Governor of Pennsylvania, acting for the Committee to Promote an Inventory of the Natural Resources of the World. The letter was signed by 175 men and women interested in the project.

"As citizens of the United States persuaded of the necessity for conserving the material basis of prosperity not only of our own country, but of the whole earth," the letter stated, in part, "we earnestly and respectfully ask you to consider the advisability of calling an international conference to discuss the common interests of the nations in the conservation of natural resources and to provide for an inventory of those resources throughout the world."

The letter then stated that the committee was convinced that the fundamental importance of the project, upon which "the civilization, welfare, and mutual helpfulness of the nations directly depend," warranted its promotion at this time.

"The United States has already moved in the direction we suggest," the letter continued. "In 1909, President Roosevelt, acting through Elihu Root, then Secretary of State, addressed to the nations of the world

an inquiry as to their attitude upon this matter, and later formally invited them, with the concurrence of the Queen of Holland, to attend a 'World Conference for the Conservation of Natural Resources,' to be held in the Peace Palace at The Hague."

Yellowstone Commission Named

President Hoover has appointed a Commission to inspect the areas involved in the proposed adjustment of the southeast, south and southwest boundaries of the Yellowstone National Park. The report of the commission will be made to the President. The following were appointed: Dr. E. E. Brownell, of San Francisco, California; Dr. Arthur Morgan, president of Antioch College, Yellow Springs, Ohio; T. Gilbert Pearson, president of the National Audubon Societies; C. H. Ramsdell, of Indianapolis, Indiana; and Arthur Ringland, of Washington, D. C.

Migratory Bird Conservation Commission Completed

The appointment of Representatives Ernest R. Ackerman, of New Jersey, and S. D. McReynolds, of Tennessee, completes the Migratory Bird Conservation Commission. The other members are the Secretary of Agriculture, Chairman, with the Secretary of the Interior and the Secretary of Commerce, Senator Peter Norbeck, of South Dakota, and Senator Harry B. Hawes, of Missouri.

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and

SAMUEL NEWTON SPRING, M. F.,

Cornell University,

Professor of Silviculture in Cornell University



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activities are presented in the endeavor to show the actual mechanics of treating forests to the end of maintaining an adequate supply of wood for all time. The theme of reconstruction and conservation is a dominant one and consequently detailed consideration is afforded, not only to a study of the best methods applicable to growing timber, but also to the manner in which the lumber may be manu-

factured with the greatest economy consistent with usefulness. The book is fully illustrated with charts and photographs designed graphically to show the results of the application of various policies. A complete appendix serves to offer access to valuable reference facts and tables.

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Southern Forestry Congress

The necessity of protecting forests from fire, the importance of reforestation, the problem of forest taxation, and the desirability of an expanded program of state and federal ownership of forest lands, featured the eleventh annual Southern Forestry Congress in New Orleans, April 4, 5 and 6.

Senator Joseph E. Ransdell, of Louisiana, speaking on "The Public Responsibility for Growing the Nation's Timber," declared that if owners of denuded timber lands fail to see their responsibility for planting them with timber, then the responsibility should be brought home to them by the state or the nation.

The discussions which followed the paper on "Progress of Forest Taxation Inquiry of the Forest Service," by Professor Fred R. Fairchild, of Yale University, created unusual interest. Other speakers on the subject of forest taxation included Lieut.-Governor Edward W. Winter, of Missouri; P. N. Howell, of the Dantzler Lumber Company, Howison, Mississippi; and R. W. Wier, of Houston, Texas.

Before adjourning, the Congress resolved against increased taxation levied upon forest lands. To accomplish a readjustment and reduction of forest taxes they suggested more rigid economy in local expenditures of government, readjustment of taxation so that taxes may bear a more equitable relation to income, and legislation to permit the taxation of merchantable timber only after it has been removed from the land.

The importance of the farm woodlands to the South was discussed by F. W. Besley, state forester of Maryland; W. R. Mattoon, of the United States Forest Service; and R. W. Graeber, of the North Carolina Extension Service. Growing hardwood timber in the South was discussed by John R. Thistlethwaite, of Opelousas, Louisiana, and others.

A large number of the delegates made the field trip to Bogalusa, where they saw the forest activities of the Great Southern Lumber Company and visited the mill where redwood from the Pacific Coast, as well as southern pine, is being saved.

George T. Houston, President of the Houston Lumber Company, of Memphis, Tennessee, was elected president of the Congress for the coming year, and Rufus S. Maddox, State Forester of Tennessee, was elected Secretary. George R. Phillips, State Forester of Oklahoma, was elected assistant secretary and Henry Hardtner, of Urania, Louisiana, chairman of the executive committee.

In accepting the presidency, Mr. Houston endorsed an educational program for the Congress which will bring before the people of the South the grave necessity of reforestation and protection against fire.

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New York Governor Signs Reforestation Bills

Governor Roosevelt of New York has signed the two bills recently passed by the State Legislature providing for an enlarged program of reforestation in that State. This program was described in detail in the last issue of *AMERICAN FORESTS AND FOREST LIFE*. At that time the two measures were on the Governor's desk awaiting his action.

In signing the bills the Governor has set in motion probably the most ambitious project in land acquisition and reforestation yet undertaken by any state. One of the measures appropriates \$120,000 for state acquisition of cheap abandoned farm lands outside the sixteen counties in which the Adirondack and Catskill forest preserves lie. The lands so acquired are to be reforested by the state and of the money appropriated \$20,000 is to be used to enlarge the state forest nurseries in order that they may provide the increased stock needed. The lands to be thus acquired and devoted to forest production are to be exempt from state and county taxes. Under this act lands purchased must include 500 acres or more and the state is to make due compensation to the counties in lieu of the loss in taxation due to state acquirement and tax exemption.

The other Act, known as the County Forest Law, provides for assistance up to \$5,000 by the state to counties which will appropriate a like amount for the purchase and planting of idle forest lands. The county may purchase lands at any price but the plan of purchase, as well as the planting and form of management, must meet the approval of the Conservation Commission.

The two bills carry out the recommendations of the New York Reforestation Commission created in 1928.

Would Preserve Hamilton's Home

The American Scenic and Historic Society, which in 1924 acquired the old home of Alexander Hamilton to save it from removal to another city, is now campaigning for funds to restore the structure and make it a museum of the first United States Treasurer and his times. Hamilton Grange adjoins St. Luke's Protestant Episcopal Church, at Convent Avenue and 141st Street, New York City.

Now in the heart of a throbbing metropolis, this old home was built in 1802, on a farm of thirty-two acres. The region surrounding it was in woods and fields. On this estate, his refuge from law and politics, Hamilton indulged his taste for horticulture, planting his famous group of thirteen sweetgum trees, symbolical of the thirteen original colonies. These trees grew to great size and lived almost a century before they were destroyed in the march of the city. The timber for the house was supplied by Hamilton's father-in-law, General Schuyler, from his estate at Saratoga.

Mule Deer Offered for Sale

A number of surplus mule deer, or black-tailed deer, are being offered for sale alive by the United States Biological Survey from the National Bison Range, in western Montana. The animals are offered at the price of \$15 each as they run on the range, the purchaser paying all expenses in connection with capturing, crating, and removing the deer.

The Biological Survey does not recommend these animals for stocking ranges in the South or East, particularly in areas already frequented by deer, but says they should do quite well in most of the western portion of the United States. Where these deer are intended only for exhibition purposes they would, of course, stand a fair chance of surviving in the East.

As the Survey desires to remove the animals from the reservation at the earliest possible date, persons interested in obtaining them should communicate with Frank H. Rose, protector in charge of the National Bison Range, Moiese, Montana.



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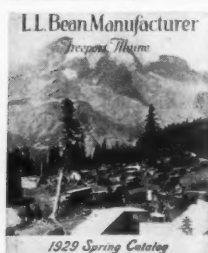
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The Forest Post-Bag



So many letters of interest drop out of our mail bag each morning that the editors have decided to be generous with some of them. So—watch for the *Forest Post-Bag*, learn what "they" think, and share our pleasure and profit. Comment on this column is invited.

In appreciation of the attitude taken by Representative Don B. Colton, of Utah, in the recent Ouachita controversy in Congress, Mr. George D. Pratt, President of The American Forestry Association, wrote him as follows:

"DEAR CONGRESSMAN COLTON:

"I have seen a copy of the letter you wrote to the President in regard to your stand on the proposed Ouachita National Park, and as President of The American Forestry Association I write to ask if you would have any objection if this letter were published in our magazine.

"We all fought against this bill, and it is splendid to have a man stand out the way you did in opposition to it."

Representative Colton held out for the highest in National Park standards, as evidenced by his letter to President Coolidge, printed herewith in full, with his permission:

"February 28, 1929.

"MY DEAR MR. PRESIDENT:

"Very much to my regret and over my protest the House yesterday passed S. 675 creating the Ouachita National Park. I am so strongly convinced that the Government ought not to depart from the established practice of creating national parks that I am taking the liberty of asking you not to approve this measure.

"There are now pending before the Public Lands Committee twelve other bills seeking to create parks in the various sections of the country based upon the theory of local demand or general distribution. I believe that before a park is created that Congress should either appoint a commission of experts to study the matter or should be governed by the Department of the Interior which now has charge of the Park Service, and that any theory of local distribution is entirely wrong. The area in the Ouachita National Forest does not measure up to the standard of a national park and therefore should not be created into one.

"If this bill becomes a law, the Public Lands Committee can not consistently refuse to report out the other twelve bills and we shall have embarked upon a policy of creating parks not to preserve something distinctive in nature, but for the creation of recreational centers under the Federal Government."

The 12th of May is "Mother's Day"—which makes the following correspondence well worth printing. From the B. F. Barr Nurseries, of Lancaster, Pennsylvania, came this inquiry:

"April 2, 1929.

"Can you advise us if the cut-leaf Weeping Birch (*Betula alba laciniata*) has been adopted as the official tree in honor of Motherhood throughout the United States?

"We understand that this tree has been selected for this purpose, and will appreciate it if you can inform us as to the correctness of the above statement."

And because it is true that this beautiful tree—the stem of which grows whiter with the years, and the drooping branches of which suggest the caressing arms of motherhood—has been nationally chosen as the "Mother's Tree," we were glad to reply:

"The white birch has been adopted as the official 'Mother's Tree' of the United States. This is correct and its planting in different parts of the country has been sanctioned by The American Forestry Association, and the custom nationalized. Any white birch, but preferably *Betula alba laciniata* because of its 'personal characteristics,' is symbolical of the purpose for which the trees are planted."

The planting of the white birch is urged, and the placing of one or more of these trees by organizations, groups of citizens, and individuals is becoming more and more a typical ceremony on Mother's Day each year all over the country.

In the May, 1924, issue of our magazine we published the story of the planting of the initial "Mother's Tree" of the United States.

In accepting active membership in the Association recently, Mr. G. Fred Orphal, of Brooklyn, N. Y., wrote in this interesting fashion:

"I am very much interested in your aims—the great forests and the big outdoors. One of your patron members, Mr. Eversley Childs, I happen to know. He gave me a job in 1892 as office boy at \$4.00 per, which I held for twenty-five years, but not, of course, at \$4.00 per week."

National Forest TIMBER For Sale

Sealed bids will be received by the District Forester, U. S. Forest Service, Washington, D. C., up to and including May 4, 1929, for all the merchantable dead timber, standing or down, and all the live timber marked or designated for cutting on an area embracing about 3,000 acres on the watershed of Irish Creek, Rockbridge County, Natural Bridge National Forest, Virginia, estimated to be 2,221 M bd. ft., log scale, of chestnut, white, red, chestnut and mixed oak, white and yellow pine, poplar, hemlock, and other species sawtimber, 12,611 oak cross ties, 660 tons of chestnut oak and 73 tons of hemlock tanbark, 3,558 cords of chestnut extractwood, and 9,399 locust posts, or the equivalent in locust cordwood, more or less. No bid of less than \$7.50 per M bd. ft. for white pine, \$7.00 per M bd. ft. for poplar, \$6.50 per M bd. ft. for red and white oak, \$4.75 per M bd. ft. for chestnut oak, \$4.00 per M bd. ft. for mixed oak, \$3.00 per M bd. ft. for yellow pine, and 75c. per M. bd. ft. for chestnut hemlock and other species sawtimber, 50c. per cord of 160 cubic feet for chestnut extractwood, \$3.00 per cord of 128 cubic feet for locust cordwood, \$2.00 per ton of 2,240 lbs. for oak and hemlock tanbark, 10c. each for oak cross ties and 5c. each for locust posts, will be considered, and in addition, to provide for silvical improvements, a deposit of 25c. per M bd. ft. actual cut of all species of sawtimber, as determined by the Forest Officer, will be made to the Cooperative Fund, Forest Service, when called for by the Forest Supervisor. One thousand dollars must be deposited with each bid, to be applied on the purchase price, refunded, or retained in part as liquidated damages, according to the conditions of sale. The right to reject any and all bids is reserved. Before bids are submitted, full information concerning the timber, the conditions of sale and the submission of bids should be obtained from the Forest Supervisor, Lynchburg, Virginia.

WANTED

POSITION as Forester or Manager on private estate. Northeastern States preferred. Graduate Forester with 20 years' experience in tree planting, pruning, thinning, logging, fire protection and considerable experience in general farming and fruit growing. Address box 52 American Forestry Assn., 1523 L Street N. W., Washington, D. C.

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Rhododendron Max—2 to 3 ft., 25 for \$7.00; 100, \$28.00
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100, \$60.00
Mountain Laurel Clumps—2 to 4 ft., 25 for \$15.00;
100, \$60.00
Full Carload lot 700 Clumps—2 to 4 ft., for—\$250.00
Hemlock—2 to 3 ft., 25 for \$5.50; 100—\$22.00
Cedar—2 to 3 ft., 25 for \$5.50; 100—\$22.00
Rhododendron Max Seedlings—8 to 24 inches; 100, \$10.00
Mountain Laurel Seedlings—8 to 24 inches; 100, \$10.00
Hemlock Seedlings—8 to 24 inches; 100—\$10.00

Roots packed in wet moss or soil and burlap
Cash, please, with order

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Utilization Committee to Meet

The National Committee on Wood Utilization will hold its annual meeting in Washington, D. C., April 29. Principal matters of discussion will be the seasoning and manufacture of lumber, utilization of wood waste and the degree of elimination of waste made possible by surveys now in progress, standardization of wood products, wood preservation, and results of the committee's earlier work.

What of Cumberland Falls?

The case of Cumberland Falls still remains unsettled. The Federal Power Commission, which held hearings during the winter on the application of Cumberland Hydro-electric Company to develop power at the falls, has not yet rendered a decision on the application. Attorneys for the power company at the hearings in December raised a question as to whether or not the Federal Power Commission has authority in deciding applications for power development to take into consideration any other factors than those bearing on navigation and interstate and foreign commerce. This challenge was directed against the claim of the National Conference on State Parks and others that to permit the power development of Cumberland Falls would destroy the scenery of the falls.

The Federal Power Commission has referred this question of its authority to the commission's counsel for an opinion and action on the part of the commission is not expected until this legal question is settled.

Forestry Combined With Game and Fish in West Virginia

Forestry was legally added to game and fish administration in West Virginia on March 9, 1929, when the State Legislature created the Commission of Forestry, Game, and Fish to take over the duties of the Game and Fish Commission as constituted in 1925. Under the terms of the new law, the Governor will appoint three members to the Commission who will serve without pay. They will appoint a technically trained Chief Forester and a Chief Game Protector.

The Chief Forester will administer all matters pertaining to the protection and development of forests. Under him will be local forest protectors who may summon individuals to fight fires under their direction. All direct costs of forest fire suppression will be paid by the county within which the fire occurs.

The Commission is authorized to purchase land suitable for state forests, forest parks, refuges for game and fish, and to investigate the watersheds of the state and report to the Governor regarding the suitability of the lands for these several purposes.

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Write for Booklet.

FOREST FINANCE

By H. H. CHAPMAN, Professor of Forest Management, Yale School of Forestry. 352 pages. Order from Tuttle, Morehouse & Taylor Company, New Haven, Conn. \$4.50 postpaid.

Does forestry pay as an investment? How can one appraise the value of forest property? How may damages be determined due to forest fires? What is the effect of taxation on forest property and how should forests be taxed? What role does interest play in forest investments?

These and many other questions of vital importance to owners of forest property are answered by the author in the light of the most recent knowledge and experience of foresters, lumbermen and land owners.

Do you want your forest property to be an asset or a liability? This book will be of real service to all owners of forest land.

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Book News



and



Reviews

LIVESTOCK HUSBANDRY ON RANGE AND PASTURE. By Arthur W. Sampson. Published by John Wiley and Sons, Inc., New York. Price \$4.50.

Livestock on forest lands has always been a source of income and at times a source of controversy. Professor Sampson, in his recently published book "Livestock Husbandry on Range and Pasture," does not enter into any of the controversial discussions as to the relationship which animals bear to forest culture, but he authoritatively presents the means by which livestock may be successfully handled on the open range and under forest conditions.

Most of the book is devoted to the han-

dling of cattle, sheep, and goats, but some space is given to the management of wild life and recreation areas, and the final chapter to the production of reindeer. The book provides a useful text for students of livestock and for forestry students who specialize on range livestock problems. It will also prove a valuable reference to forest officers who are administering lands from which grazing fees form a considerable portion of the gross revenue. G. H. C.

AMERICAN PLANTS FOR AMERICAN GARDENS.

By Edith A. Roberts and Elsa Rehmann. The Macmillan Company. New York. Price \$2.00.

The authors, pioneers in this interesting and comparatively new field of plant ecology or the study of plants in relation to their environment, discuss the natural groupings of plants in the Northeastern States from the Atlantic west over the Alleghenies and south to Georgia in relation to garden making. The fundamental principle—namely, that grouping of plants throughout the world is controlled by temperature, moisture, and light—is kept ever before the attention of the gardening enthusiast in such chapters as "The Gray Birches," "The Oak Woods," "The Beech-Maple-Hemlock Woods," "The Stream-side," and others. Each chapter is named for that plant which is most prominent in its own particular plant "association." Supplementing these chapters are complete lists of vegetation which are natural companions in the various localities.—D. M. K.

KETTLES AND CAMPFIRES—THE GIRL SCOUT CAMP AND TRAIL COOK BOOK. Girl Scouts, Inc., 670 Lexington Avenue, New York City, 1928.

How many times have you made a special effort to plan a novel picnic? "Kettles and Campfires" tells the service of food, not just to delight one's taste or to keep one alive. Selection of the correct food is important. Certain climate and activities require food especially for power, heat, energy, and work. All filling food is not necessarily the kind to guard against immediate hunger.

Full of ideas for the camper and follower of trails, this little book suggests posters, games, treasure hunts, and contests in addition to giving menus and recipes. Buying and storing hints—packing, supplies, and equipment hints will care for the entire trip, whether the group be small or large.—G. M. K.

"Primitive Area" Policy Established on National Forests

Permanent preservation of wilderness areas in their natural state became a National Forest Policy late in March when the United States Forest Service announced plans to safeguard virgin areas for the public and for scientific and educational purposes. The areas will be designated as "Primitive Areas" and "Research Reserves."

The primary purpose for the establishment of these "Primitive Areas" in the National Forests is to prevent the unnecessary elimination or impairment of unique natural values, the Forest Service announced, and to conserve, so far as controlling economic considerations will permit, the opportunity to the public to observe the conditions which existed in the pioneer phases of the nation's development, and to engage in the forms of outdoor recreation characteristic of that period; thus promoting a truer understanding of historical phases of national progress.

The "Research Reserves" will serve permanently to preserve in an unmodified condition areas representative of the virgin growth of each forest type within the National Forests.

Tracts appropriate for both Primitive Areas and Research Reserves will be designated in each of the major forest regions. So far as practicable, the system of Research Reserve will be designated eventually to insure the preservation of virgin areas typifying all important forest conditions in the United States. Within these reserves, scientific and educational use will be exclusive except as public use for recreation may be found. Scientific agencies outside the government will be allowed to use the reserves freely.

Regulations governing the Primitive Areas will allow considerable leeway to take care of particular situations. In general, however, the areas will be maintained as nearly as practicable in a state of primitive simplicity. The Forest Service will favor liberal use of the Primitive Areas by the public without restrictions other than those imposed by the fire regulations and the State laws on sanitation.

In announcing this new policy, Chief Forester Stuart said: "With the exception of the National Parks and Indian Reservations, the National Forests contain the only considerable areas of land within the United States in which the original or virgin conditions have not appreciably been modified by human action. Each year invasion threatens some such area.

"Reduction of all wild areas to a common level would constitute an irreparable loss to science and education. Lost, too, would be the social advantages of preserving some examples of the conditions under which the nation developed and which influenced national ideals, tradition, and modes of life,

The economic desirability of outdoor recreation in such primitive areas is obvious.

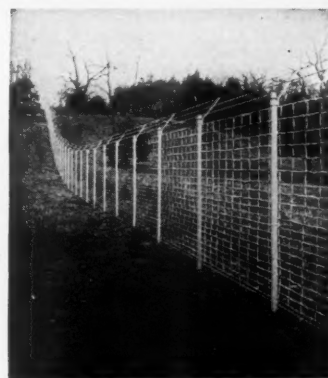
"During the past decade, the Forest Service has adopted and applied several measures to meet this situation. In several cases the Secretary of Agriculture has classified areas as chiefly valuable for outdoor recreational use and has stipulated that all other forms of use should be coordinated with recreation. More recently there have been developed programs of wilderness areas or natural areas.

"Primarily, these different measures have been designated to safeguard recreational opportunities. But in late years the value of unmodified areas to science and research has become more and more evident and is receiving increasing emphasis from individual research workers.

"In view of these considerations, there is a clear obligation upon the Forest Service in its administration of the National Forests progressively to determine and provide for the permanent dedication and preservation of both the Primitive Areas and the Research Reserves."

"Forest Flyer" Distributes Trees

In an effort to stimulate the reforestation of waste acres in Indiana, the State Conservation Department, in cooperation with officials of the New York Central Railroad, recently distributed 230,000 young forest trees from a special train to prospective planters. The "Forest Flyer" visited twelve counties. It carried an exhibit showing the uses of wood, and a staff of lecturers who advised as to the planting and care of the trees.



Anchor Fence Surrounding Game Preserve of Walter C. Teter, Esq., Harveys Lake, Pa.

STRONG, heavily galvanized fences of all types for every purpose. With or without barbed-wire top.

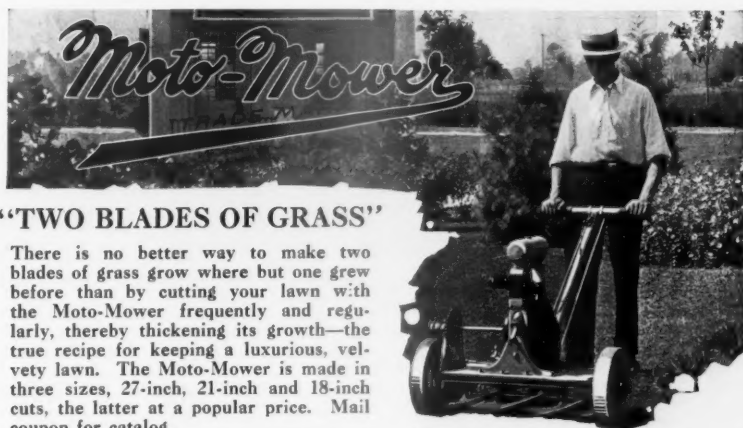
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Four Large Tracts of Timber For Sale

Sealed bids will be received until 12 o'clock noon, Pacific time, Tuesday, June 18, 1929, for the purchase of the standing timber on four large tracts within the Quilezt Indian Reservation in western Washington. Each of the four units contains approximately four hundred fifty million feet of timber. The timber consists of cedar, spruce, Douglas fir, hemlock, white pine and white fir. The minimum prices that will be considered are \$2.50 for cedar, spruce, Douglas fir and white pine on two of the units and \$3.00 for the same species on the other two units. The minimum price that will be considered for hemlock, white fir, and other species on any of the units will be \$1.00. Each bid should cover all species within the unit upon which a bid is presented. Each unit also contains a considerable quantity of cedar poles and Douglas fir piling which will be sold by the linear foot. The units are Lunch Creek, Joe Creek, Raft River, and Cape Elizabeth.

The original prices bid will remain in effect until April 1, 1933, at which date the prices on all species and classes of timber products may be increased in the discretion of the Commissioner of Indian Affairs. The increases will be based upon the increase in the average price of logs in the Grays Harbor region during the three-year period ending December 31, 1932, over the average price during the three-year period ending December 31, 1928, as stipulated in the contract of sale. In determining an increase in price of stumpage consideration will be given to any increase or decrease in the cost of log production during the same periods and the increase in price of stumpage of any species will not be greater than one-half the increase in price of logs during the said three-year period ending December 31, 1932. Each three years subsequent to April 1, 1933, the Commissioner may increase stumpage prices in the same manner as for the period beginning April 1, 1933. On each of the sales 5,000,000 feet must be removed prior to March 31, 1933, and not less than 25,000,000 feet during each twelve months thereafter until all timber is cut from each unit. The contracts contemplate the removal of all timber prior to March 31, 1951.

All bids must be submitted to the Taholah Indian Agency at Hoquiam, Washington, in duplicate, and each bid must be accompanied by a certified check on a solvent National Bank in the amount of \$20,000. The deposits with bid will be returned to unsuccessful bidders, applied as part of the purchase price of successful bidder, or retained as liquidated damages if the successful bidder shall not execute contract and furnish a satisfactory bond for \$50,000 within 60 days from the acceptance of his bid. The right to waive technical defects and to reject any or all bids is reserved. Copies of the advertisement, approved form of contract, topographic and stand maps of each unit, blanks for the submission of bids, and other information may be obtained from the Superintendent of the Taholah Indian Agency, Hoquiam, Washington.

CHAS. H. BURKE,
Commissioner.

Washington, D. C., March 7, 1929.

Don't Guess!

Measure the lumber on your Southern wood lot or forest with our specially designed

TREE-SCALE STICK and LOG-SCALE STICK

By the Use of These Sticks You Can Quickly Determine the Number of Logs That Can be Cut from a Given Tree and the Contents in Board Feet for Both Loblolly and Shortleaf Pine.

The Sticks are Made of Specially Selected Maple with Figures in Black and Heavily Varnished to Resist Wear.

Each Set Consists of Two Sticks in a Heavy Canvas Container and a 16-page Booklet Giving Complete Instructions for Use and Other Useful Information.

\$1.00 a Set, Postpaid

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THE AMERICAN FORESTRY ASSOCIATION

1523 L Street N. W. Washington, D. C.

Name Teton Park Head

Appointment of Samuel T. Woodring as superintendent of the new Grand Teton National Park has been announced by the National Park Service. Mr. Woodring has served as chief ranger of the Yellowstone National Park for seven years, and during that time has come to know the Teton region intimately. Before joining the Yellowstone ranger force in 1920, Mr. Woodring devoted twenty-one years as a civilian packer in the United States Army, covering the trails of the Yellowstone region.

Forestry in Georgia's Vocational Schools

The Georgia Forest Service has launched a plan for school demonstration forests at one hundred and fifty agricultural vocational schools in the state. Ten acres, more or less, near each school will be acquired for purposes of experiment and demonstration. These school forests will serve as laboratories for courses in tree identification, fire prevention methods, timber estimating, thinning, reforestation, and nursery practice. All work on the school forests will be in accordance with recommendations made by the state forester and complete records will be kept of all products harvested.

A limited number of scholarships will be awarded each year to students in these vocational schools doing the best work in forestry. These scholarships will give the students a summer course in vocational forestry at a camp where more advanced work along the same lines will be taught. In addition, an annual prize of \$100 is planned for the vocational agricultural teacher whose work in forestry is so outstanding as to stimulate interest and initiative among the students and among the adults in the community. The money for the scholarships and prize is being furnished through the Georgia Forestry Association.

After finishing two sessions of summer work in connection with the forestry course of the vocational agricultural school, the students will receive a certificate giving them the title of Vocational Forester.

Naval Stores Men Meet

Approximately two hundred and seventy-five persons, including representatives from Canada, Mexico, England and France, attended the sixth annual conference of the Pine Institute of America held in Pensacola, Florida, February 20-22. Forestry and naval stores exhibits were displayed by the United States Forest Service, Florida Forest Service, United States Bureau of Chemistry and Soils and other agencies and individuals. Dr. Louis Marks, of the Alcohol Institute of New York, delivered the keynote address. Officers elected for the coming year were J. E. Lockwood, of the Hercules Powder Company, President, and Carl Speh, Secretary.



Plant Memorial Trees Identify Them with Markers

TREES

*I think that I shall never see
A poem lovely as a tree.
A tree whose hungry mouth is
prest
Against the earth's sweet flowing
breast;
A tree that looks at God all day
And lifts her leafy arms to pray;
A tree that may in summer wear
A nest of robins in her hair;
Upon whose bosom snow has lain;
Who intimately lives with rain.
Poems are made by fools like me,
But only God can make a tree.*

—JOYCE KILMER.

Plant a tree. What more beautiful tribute to a loved one than that glorious sign of Nature to the world that life is ever renewing?

Handsome cast bronze shield-shaped markers (illustrated above), four by three and three-quarters inches, are \$2.50 each postpaid. Screws for attaching to the tree are included with each marker. Lower prices may be had on 25 or more markers ordered at one time.

Special markers with either of the following headings: "In Honor of," and "Memory Tree," are \$3.50 each. On these markers you are allowed four additional lines of inscription. Through these bronze words your tribute will live forever.

Certificates of Registration of Memorial Trees are furnished free to members of the Association. All requests for certificates should give name of individual or organization planting, date of planting, kinds of trees, and name of person in whose memory they have been planted.

The American Forestry Association
1523 L Street N. W.
Washington, D. C.

To Study Gardens of the Orient

A tour through Oriental gardens and an opportunity to study under expert tutelage the treasures and phantasies of ancient garden craft and landscaping has been planned by Professor P. H. Elwood, Jr., of the Department of Landscape Architecture, Iowa State College, and Mr. Upton Close, of New York, author and formerly Professor of Asiatic Culture at the University of Washington.

The party will leave Seattle June 24, stopping first at Yokohama, where Dr. Ueyehara, president of the Japanese Society of Landscape Architects, will welcome them. Visits will be made to Nikko, Nagoya, center of porcelain and cloisonne making; to Kyoto, the garden center of Japan; to Nara and Kobe, and many other places. At Hongkong Dr. Sue Hin Pan, a Chinese authority, will meet the party and take charge of its tour. Tientsin, Nanking, Shanghai and other centers will be visited and the temples, shrines and gardens inspected.

Revolution Halts Quail Shipment

The shipment of two thousand pairs of Mexican quail from Mexico to North Carolina for distribution in depleted covers of the state has been held up because of revolutionary activities in the southern republic, according to Director of Conservation Wade H. Phillips. The first shipment from Mexico was made last spring.

National Lumber Meeting

Completion of plans for its trade and grade-marking program and action to put into effect an extended statistical program to give complete lumber supply and demand service will be the two major considerations before the twenty-seventh annual meeting of the National Lumber Manufacturers Association, at Chicago, April 24 to 26, inclusive.

Kansas and Montana Act in Matter of Bird Refuges

Kansas and Montana are the first states to take special action in the matter of federal acquisition of land for the establishment of bird refuges, authorized by the new Migratory-Bird Conservation Act, the United States Biological Survey has announced. Special enabling acts have been passed in the two states.

Existing legislation in Arizona, Colorado, Connecticut, Georgia, Illinois, Iowa, Louisiana, Maine, Maryland, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Ohio, Oklahoma, South Carolina, South Dakota, West Virginia, and Wyoming is sufficient for the Federal Government to proceed with the acquisition of areas for refuges. The remaining states will have to pass enabling acts.

Want Plant Quarantine Chief

The United States Civil Service Commission has announced a competitive examination for the position of Chief of Plant Quarantine and Control Administration, United States Department of Agriculture. The entrance salary is \$6,500 a year. Instead of the usual form of civil service examination, the qualifications of candidates will be passed upon by a special board of examiners. Formal applications will be received by the Civil Service Commission until May 1.

Hoover Wilderness Area

When President Hoover was roughing it during the summer of 1926, along the upper stretches of Virginia Creek, in California, he remarked that he had endeavored to find a spot where no one could reach him by telephone. Hoover Lake, within this area, was named in honor of his brother, Professor T. H. Hoover, of Stanford University, who was manager of the Standard Mines of Bodie in 1904 and 1905. During this period Herbert Hoover spent much of his summer vacation time within the territory. The area, therefore, can appropriately bear the name of the President.

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Ask the Forester?

Each Month Forestry Questions Submitted to the Association Will Be Answered in This Column. If an Immediate Reply is Desired a Self-Addressed, Stamped Envelope Must Accompany Letter.



QUESTION: How hardy is the Syberian elm? Is it a fast grower, and will it grow on Long Island?—E. R. T., New York.

ANSWER: Syberian elm is more generally known as Chinese elm (*Ulmus pumila*). It has a variety of forms and appears to grow well over much of the United States. It has been introduced into this country only a comparatively few years. It is especially successful in the dry land regions of our central western states. Individual specimens are now growing successfully on Long Island.

QUESTION: Is it a good practice to attempt to raise wild animals and game, such as deer and antelope, where cattle, sheep, and goats range?—G. B. B., California.

ANSWER: Wild animals, such as deer and antelope, are not materially interfered with by normal, well-supervised grazing of cattle, sheep, or goats. In fact on most of the National Forests the two groups of animals live and feed together without any material difficulty.

QUESTION: A friend and I, both college men, are desirous of obtaining summer employment on either a National Forest or a

National Park. To whom should we apply?—N. J. B.—Wisconsin.

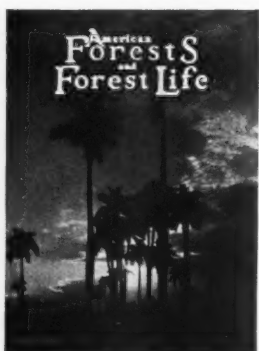
ANSWER: Applications for summer work on the National Forests should be addressed to the Forester, U. S. Forest Service, Washington, D. C., and for employment on the National Parks, to the Director, National Park Service, Washington, D. C.

QUESTION: The enclosed clipping from a local newspaper asserts that the Pacific Coast contains enough standing timber to supply the nation with lumber practically for all time. Is this correct?—E. M. C., Indiana.

ANSWER: We do not subscribe to the statement that the forests of the Pacific Coast are inexhaustible. The figures quoted in the newspaper article are taken from a government report published almost ten years ago. Since that report was made, the Pacific Coast forests have been reduced by ten years of heavy cutting. The actual amount of available timber on the West Coast is not definitely known. One of the best available estimates made recently is that of Mr. David T. Mason, a forest engineer of Portland,

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May, 1929

Oregon. Mr. Mason estimates that on January 1, 1927, the three Pacific Coast States of Oregon, Washington, and California contained a total of 872,000,000,000 feet. Annual net depletion he placed at 17,700,000,000 feet yearly. This depletion he said may increase to 20,000,000,000 feet yearly during the decade 1936, to 22,000,000,000 during the decades 1946 and 1956, falling off to about 18,000,000,000 feet during the decade 1966. Three years more would exhaust not only the 872,000,000,000 feet to start with but all that had reached saw-timber size in the forty-three years between 1926 and 1969. "Then," he said, "the industry would be through until more timber grew to usable size."

QUESTION: I have read that eighty per cent of forest fires in the United States occur in the southern states. After a trip through Florida I can well believe this. Surface fires seems to have burned over every available foot of wild land, destroying young trees and injuring large ones. Do the injuries which these surface fires inflict upon the larger trees affect their value for lumber?—G. G. H.—New York.

ANSWER: Yes. Recent studies made in the South by the Forest Products Laboratory revealed that fire damaged logs sawed out less lumber and of poorer quality than sound logs. On a gross log scale, it was found that the fire damaged logs were worth only \$32.11 per thousand feet as compared to

\$42.31 for the sound logs, or a difference of \$10.20, which must be charged to fire. This does not take into consideration the fire damage to reproduction, retardation of growth, or the reduction of soil fertility due to the burning of the woods. See Mr. Demmons' article elsewhere in this issue.

QUESTION: Should the health, form, and character of the tree be considered in collecting seed for the raising of nursery and planting stock?—J. H. A.—Wisconsin.

ANSWER: By all means. While tree heredity is not yet fully explored, recent studies have established the fact that trees tend to perpetuate their characteristics. Thus, seed collected from a healthy, sound, rapidly-growing tree will, as a rule, produce sturdier and more rapidly growing offspring than seed collected from an unhealthy or slow-growing parent.

New Jersey Ships 2,000,000 Seedlings for Planting

Approximately 2,000,000 forest tree seedlings, raised on the New Jersey State Forest Nursery at Washington Crossing, are being packed and shipped at the rate of about 100,000 a day to water companies, land owners, and others engaged in reforestation enterprises, says a statement issued by the Division of Forests, Department of Conservation and Development. The seedlings are sold at actual cost to residents of the state who wish to plant idle land.

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Walnut Burl From New Mexico

On ranches on the Ruidoso and Bonito Creeks, within the borders of the Lincoln National Forest, New Mexico, one rancher has cut 201,000 pounds of walnut burl. With the exception of 10,000 pounds sold to the Pullman Company, of Chicago, to be used for interior furnishings of Pullman cars, it has all been shipped to England and France. A single tree in the Ruidoso district of the forest contained 12,970 pounds of merchantable burl. In this tree the burl extended almost to the top and eight feet into the ground. To cut it up and load the wood on trucks was nine days' work for five men.

Schlich Memorial Prize Award

The first installment of interest on a fund of \$8,500 subscribed in 1928 by friends of the late Sir William Schlich was awarded to the Australian Forestry School at Canberra. Trustees of the fund decided to pay the interest each year to different parts of the British Empire and the United States, for use in some cause to further forestry.

Forest Officer Aids Stricken Alaska Community

Bringing the first outside aid to the flu-stricken town of Hoonah, Alaska, Ranger George Peterson of the United States Forest Service is credited by local inhabitants with having helped to save a number of lives.

Peterson brought the Forest Service boat R-7 into the harbor at Hoonah to anchor for the night. Learning of the flu epidemic which had confined more than 300 of the 500 population, he set out at once for Juneau for emergency medical supplies. He reached Juneau the next day, after an all-night run, handling the boat alone. After taking aboard the needed medicines he set out on the return trip, arriving at Hoonah late the following day.

Committee to Study Soil Erosion

Dr. A. F. Woods, Director of Scientific Work for the United States Department of Agriculture, has appointed a special committee to conduct a comprehensive investigation of soil erosion and moisture conservation throughout the United States. Heading the committee is Dr. A. G. McCall, Chief of Soil Investigations, Bureau of Chemistry and Soils. Other members are S. H. McCrory, Chief of the Division of Agricultural Engineering, Bureau of Public Roads; Earle H. Clapp, Assistant Forester in charge of the Branch of Research, United States Forest Service; J. G. Lipman, of the New Jersey Experiment Station, and A. B. Conner, of the Texas Experiment Station.

Minnesota's Conservation Bill is Held Up in Senate

Minnesota's conservation bill, which among other things provides for a sweeping reorganization and enlargement of the State's forest and land management, was withdrawn from the State Senate early in April after its authors were convinced that certain amendments had rendered it valueless. The bill had previously passed the House by a large majority as originally recommended by the Minnesota Reforestation Commission.

The Senate by a very small majority opposed most of the Commission's recommendations, substituting amendments that are said to have defeated the purpose of the bill. The House refused to consider the Senate's version of the bill by a vote of ninety to eighteen. It was returned to the Senate, where new action is expected to be taken soon.

The Minnesota Reforestation Commission recently completed a thorough study and investigation in respect to afforestation and reforestation of land, and delinquent real-estate taxes, and the finances of counties and taxing districts in the forest areas of Minnesota. Among other things the Commission recommended that all of the powers, rights, and duties of the Conservation Department and the Department of Drainage and Waters as well as those of the State Auditor as to land, timber and mines be vested in a Commissioner of Conservation with necessary directors or deputies in charge of a Division of Forestry, a Division of Drainage and Waters, a Division of Fish and Game, and such other divisions as the Commissioner may from time to time establish.



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Ancient Box Trees of England

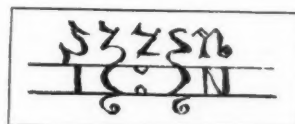
(Continued from page 264)

III, and the walk within them used as a secluded exercise ground." It is supposed that the original central trunks were nearly all cut down in ages past, probably for the value of the wood, and the present stems, now twenty feet high, are off-shoots which have grown up round each central trunk. The result is that they produce a shade more dense than before.

The old square garden is still surrounded on all four sides by these box trees, but those on the north side are poorer and thinner than those on the other three sides. These groves are about 180 feet long. In spite of their seven centuries of life the trees are unusually luxuriant in their growth and the leaves are larger and brighter in color than those commonly seen. I regard their survival, together with the record of their origin, as a greater discovery than the box leaves excavated from the Roman cemetery near by, though these were no doubt gathered from trees in the vicinity.

Now comes the strangest part of the story. They grow in a place which was named Box in the Domesday Survey, though this was afterwards incorporated with the parish of Wymondley. It seems probable that box trees have been growing here uninterruptedly since the Roman period and perhaps long before it. Box trees grow freely and seed themselves about near a place named Boxmoor on the chalk downs between Ashridge and Great Berkhamstead, Hertfordshire, and also on the Dunstable Downs near a place named Boxstead. Such place-names as Boxford, Boxhale, Boxhey, Boxland and Box Wood near Hertford, all point to the

fact that this tree grew in England in very early times. The box grows plentifully in Highclere Park, Hertfordshire, where it is scattered over the steep hillside. Mr. E. S. Marshall writes in the *Journal of Botany*, XIV, 1907: "He must be very sceptical who doubts it being native on the steep slopes of Box Hill above Burford Bridge, Surrey. This is regarded as the largest natural station for the box in Great Britain. A large number still flourish there, but in 1815 the trees cut down were sold for 10,000 pounds." Evelyn, the Diarist, writes of this charming locality: "These trees rise naturally at Boxley, in Kent, and in the County of Surrey giving name to the chalky hill,



In the Thirteenth Century, when writing was an accomplishment only of the learned, wooden stamps such as this were cut in the ivory-like texture of box, for use as seals in attesting written documents

whither ladies and gentlemen often resort during the heat of the summer to walk, collocate and divert themselves into these antilex natural alleys and shady recesses among the box trees."

Although mention has been made of the box in topiary work, nothing has yet been said about its use as an edging for flower beds and garden paths. The most beautiful box edgings I have ever seen are those to be found in the late Earl Brownlow's gardens at Ashridge Park, Hertfordshire.

In this grand old palace, the Italian Garden and what is known as the Monk's Garden are outlined in box. I do not think the design could possibly have been carried out with such artistic effect had any other edging been used. And when we consider that the ancient trees in the Benedictine garden, at Hitchin, and those in the Augustine Priory, at Wymondley, were planted in all probability as an edging to the walks in those gardens, we are at once made to realize the flight of centuries. If we desired to depict the enchanted garden which surrounded the castle in which the Princess in "Sleeping Beauty" so long lay till awakened by the kingly love of some noble knight or fearless fairy prince, nothing could convey the lapse of centuries so clearly as a box edging grown into tall trees, with gaunt grey gnarled and twisted stems. In their sight we forget the work-a-day world and enter the world of romance.

It is indeed difficult to estimate all we owe to the box, for the ivory-like texture of the heavy white wood alone made the delicate art of wood engraving possible. Perhaps it originated in the Thirteenth century, when writing was an accomplishment of the learned few, and when wooden stamps were cut for use as sign manuals in attesting written documents.

Timber Survey in Great Smokies

A survey of standing timber and an appraisal of more than thirty-six thousand acres of land of the Suncrest Lumber Company, located within the purchase area of the Great Smoky Mountain National Park, North Carolina and Tennessee, has been started by the James D. Lacey Company. The survey will be completed within ninety days.

Chapman to Head Connecticut Wild Life Commission

Professor H. H. Chapman, of the Yale Forest School, has been chosen to succeed Senator F. C. Walcott as president of the Connecticut State Commission on Forests and Wild Life. Senator Walcott resigned upon his election to the United States Senate.

Professor Chapman has been a member of the State Park Commission since its organization in 1913 and of the Wild Life Commission since its founding in 1925. He is professor of forest management at the Yale School of Forestry and the author of numerous textbooks and articles on forestry and wild life.

Status of Reindeer Meat

Alaskan reindeer are not included in the Federal Meat Inspection Act but may be received into the United States and shipped interstate and, when marked for identification, may be received and handled in federally inspected plants, according to a ruling formulated by a Joint Committee of the Department of the Interior and the Department of Agriculture.

Sportsman's Exposition Opens

The Pacific Coast Pleasure Boat and Sportsman's Exposition will open at the Civic Auditorium in San Francisco, April 27, and continue until May 4. This exposition, which is a cooperative and non-profit enterprise, is expected to draw more than 100,000 people. In addition to elaborate exhibits of yachts, motor boats, outboard motors, fishing and hunting equipment, a full calendar of sporting events has been scheduled under the auspices of the Associated Sportsmen of California.

The Advisory Board of the Exposition includes I. Zellerbach, Chairman of the California Fish and Game Commission; P. Paul Paige, President of the Associated Sportsmen of California; and Daniel Pratt, Editor of *Pacific Motor Boat*.



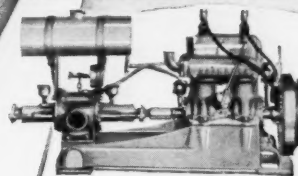
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Area Under Irrigation Doubles

During the past ten years the world area under irrigation has approximately doubled, according to the Department of Commerce which, with the Bureau of Reclamation of the Department of the Interior, has just completed a survey. It is revealed that there are 200,000,000 acres of land throughout the world under irrigation. Of the continents, Asia stands first with more than 140,000,000 acres, or seventy per cent of the total, followed by North America with nearly 27,000,000 acres. Europe has 15,000,000 acres and Africa 10,000,000 acres. The United States accounts for four-fifths of the total acreage under irrigation in North America.

Women's Clubs Offer Prizes

The Division of Forestry and Natural Scenery of the General Federation of Women's Clubs has announced a first prize of twenty-five dollars, second prize of ten dollars, and a third prize of five dollars for the best letters stating why the National Parks of America should not be exploited for commercial purposes and why privately owned lands now within their boundaries should be acquired by the Government. The purpose of the contest is to arouse an appreciation among club women of the necessity of consideration of the best means of safeguarding the National Parks of the Nation.

Pulp and Paper Institute Opened in Montreal

A new pulp and paper institute, said to be the finest of its kind in the world, was recently opened in Montreal, by Lord Willingdon, Governor General of Canada. The laboratory was made possible by the cooperation of the Canadian Pulp and Paper Association, McGill University, and the Dominion Government. In it will be conducted investigative work which undoubtedly will be of great value in solving problems relating to the manufacture of pulp and paper and allied products. Lord Willingdon, in his address, expressed the opinion that the depression now felt in the industry will give way to a return of prosperous conditions.

Rust Regulations Amended

The quarantine regulations on account of the Woodgate rust, a dangerous disease attacking Scotch pine and several other hard pines, have been amended to include Madison County, New York, according to the United States Department of Agriculture. The amendment became effective April 1. The entire area now under quarantine on account of this disease comprises the following counties in the State of New York: Clinton, Essex, Franklin, Hamilton, Herkimer, Jefferson, Lewis, Madison, Oneida and St. Lawrence. This quarantine prohibits the movement of Scotch pine and certain other hard pines to points outside the State.

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fire and hogs longleaf pine seedlings are hardy and make rapid growth. If not so protected, few survive to reach maturity.

Each year, it is estimated, from ten to twenty million acres are needlessly burned over in the South alone. This means an enormous loss of potential timber and the undoing of nature's efforts to maintain the forests, points which are being strikingly and impressively brought out in the educational project of The American Forestry Association now under way in the South.

State Parks Meeting

Recent development in the field of state parks, forests, and game preserves will be featured at the Ninth Annual Meeting of the National Conference on State Parks at Clifty Falls, Indiana, May 7, 8, and 9. According to Colonel Richard Lieber, Director of the Department of Conservation of Indiana, subjects to be discussed will be California's six million dollar state park bond issue, the Ouachita Park situation, state park survey, control of the vandal, the billboard problem, a national scenic survey, and regional conferences.

Forestry Fair in November

The second annual state forest fair will be held at Valdosta, Georgia, November 20, 21, and 22, according to an announcement of the Georgia Forest Service, under whose auspices the fair will be held. The first fair was held at Waycross, Georgia, in 1928. Arrangements have been made to demonstrate daily phases of forest management in nearby forests, including thinning, fire control, turpentineing, and logging.

Program of Range Research

The problems of range management will be studied on a more extensive scale in the next fiscal year since an increase of \$14,320 for this work was provided in the agricultural appropriation bill recently approved, the Forest Service has announced. The total fund available for research is \$67,000. The additional funds will be used for work in the intermountain region in Utah, Nevada and Southern Idaho, a substantial portion of the amount going to the Great Basin Range Experiment Station, which has been handicapped in the past by a lack of money.

Dog Helps Take Game Census

Max Berry, a bird dog owned by Professor H. M. Wight, of the School of Forestry and Conservation, University of Michigan, has proved a valuable aide in making game counts on privately owned state refuges. The dog has been worked three years and was trained on pheasants in Oregon, and has developed surprising speed and accuracy. He has traveled more than 10,000 miles on the running board, and during 1928 has pointed approximately 1,000 birds, varying his scouting tactics according to the species "hunted." Last February Professor Wight spent a day census-taking on a 560-acre tract where the dog flushed fifty pheasants and pointed six flocks of bob-whites.

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Oregon Has Reforestation Law

A tax of five cents an acre annually on lands used for growing trees and a yield tax of twelve and one-half per cent based upon the timber crop when harvested are the principal features of the reforestation law recently passed by the Oregon State Legislature. In addition to the annual tax and the yield tax, timberland owners are required to protect their growing timber from fire.

All lands classified as reforestation land by the State Board of Forestry come under the provisions of the new law. In case of protests against the classification established by the Board, cases may be reviewed by the State Tax Commission, which is empowered to change in part or in whole the classification of any lands for reforestation when in its judgment such lands are not being used in a manner to accomplish the purposes of the law.

If for any reason lands classified are rejected or withdrawn, they are immediately returnable to the county tax roll and subject to the usual ad valorem tax, in addition to any amount of money equal to the excess of the ad valorem property tax over the amount of the forest fee while the property was classified as reforestation land.

Provision is made for the owners of lands devoted to growing forests entering into contractual relations with the State after July 1, 1933, for a definite period, during which time the annual fee and yield tax provisions will apply to such lands.

Rhode Island's Forestry Program

The development of a strong State Department of Forestry, the introduction of the town forest idea in the State, a rigid campaign against forest fires, particularly along the lines of education, and a greater program of reforestation featured the 1929 forestry program adopted by the Rhode Island Forestry Association at their recent annual meeting.

The Association also accepted the task of encouraging all farm organizations in the State to emphasize the importance of giving better care and management to the farm woodlot and to encourage the owners of large tracts of forest land to adopt good forest practice in the management of the woodlands. Modification of tax laws so that forest owners may be exempt from taxation on growing trees was also recommended.

Other activities approved by the Association included a land survey of the State so that all land which should be growing trees of one kind or another may be designated and the owners encouraged to plant them; a study of the question of giving the State some control over the lumbering business so that good forest practice may be encouraged and the slash removed when lumbering is carried on; and to support the Department of Agriculture and encourage it to fight constantly insect pests and fungus diseases.

WHO'S WHO

Among the Authors in This Issue

ROBERT LINDSAY MASON devotes much of his time writing and painting in the Great



Robert L. Mason

Smoky Mountains down in Tennessee, for he is both a writer and artist of note. His book, "The Lure of the Great Smokies," was recently published. When not fishing, hiking, or hunting in the Smokies, he may be found at Knoxville.

H. H. WARNER lives on Briscoe Road, Hoddesdon, Herts, England, and the history of England's trees has long been a source of great interest to him. He has published many articles on the subject.

ANDERSON McCULLY is a bit misleading, for it should be Alice Woodruff Anderson McCully. Born in Seattle, Washington, she has found the flora of the Pacific Coast intriguing, and her vacations and leisure moments are spent tramping alone over the mountains of the Northwest. She is the daughter of Ada Woodruff Anderson, a novelist of the past decade, and her grandfather was at one time president of the University of Washington.

BEN EAST is Nature Editor of the Grand Rapids, Michigan, *Press*, and his knowledge of the Lake States as well as his understanding of the conservation movement there, has given much force to his writing.

WILLIAM ALPHONSO MURRILL, A. M., Ph. D., is a native of Virginia, a graduate of Cornell University, and was formerly assistant director of the New York Botanical Garden. He is widely known as an explorer and lecturer, having devoted much time to this work in Mexico, South America and Europe.

E. L. DEMMON is Director of the Southern Forest Experiment Station, at New Orleans, Louisiana, and has for a number of years been engaged on extensive fire studies in the South.

E. A. WOODS is a Forest Ranger of the United States Forest Service, assigned to the Troy Ranger District, Troy, Montana; LEONORA B. ELLIS resides at Tampa, Florida; G. H. COLLINGWOOD is Forester for The American Forestry Association; LILIAN M. CROMELIN, an Assistant Editor of *AMERICAN FORESTS* and *FOREST LIFE*, presents the fifth of her series, "Artists of the Outdoors," and ADELAIDE BORAH, a research writer of Washington, D. C., concludes her series, "Trees of the Bible."

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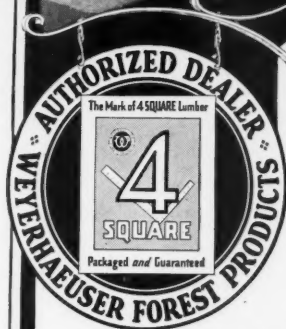
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